

*A Study of Teaching Efficiency and Teaching
Aptitude in relation to Experience of Male
and Female Arts and Science Teachers of
Intermediate Colleges of
Jhansi Mandal, Jhansi*

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DECLARATION

I, solemnly declare the Thesis, entitled "**A STUDY OF TEACHING EFFICIENCY AND TEACHING APTITUDE IN RELATION TO EXPERIENCE OF MALE AND FEMALE ARTS AND SCIENCE TEACHERS OF INTERMEDIATE COLLEGES OF JHANSI MANDAL, JHANSI**", submitted by me for the award of Ph.D. Degree in Education of the Bundelkhand University, Jhansi (U.P.) is my own work and has not been submitted earlier. However, if anything contrary to this declaration is found later on, I shall be fully responsible for the consequences there of.


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CERTIFICATE

Certified that the Thesis entitled "**A STUDY OF TEACHING EFFICIENCY AND TEACHING APTITUDE IN RELATION TO EXPERIENCE OF MALE AND FEMALE ARTS AND SCIENCE TEACHERS OF INTERMEDIATE COLLEGES OF JHANSI MANDAL, JHANSI**", submitted by **YATENDRA SINGH KUSHWAHA** for the award of Ph.D. Degree in Education of Bundelkhand University, Jhansi is the candidates own work which has been carried on under my guidance and supervision for the required period as per the ordinance of Bundelkhand University, Jhansi and he has put in the required attendance.


(*Ram Lakhan Vishwakarma*)

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Man is a social person not only because of his gregarious instincts but because there is always a give and take between man and his environment-animate and inanimate. A research project therefore it is evident can not be carried out in isolation. In way case world pay that were it not for my well wishers this project would have died a nascent death a few years back.

After Independence the need for knowledge of education for rapid development of the country was strongly felt because Education stands for proof of statements, closeness of attention and conservation. It gives us the scientific habit of mind which all that in superstitions. It develops in us the tendency to enquiry in Truth of things. It gives us method the spirit of knowledge is every where now a days. A student carrying on research work must have the methodical habit of education. He must know the science of research in this ways even education has become a science. Therefore *A study of the Teaching efficiency and Teaching aptitude in relation to experience of Male and Female Arts and Science Teachers of Intermediate Colleges of Jhansi Mandal Jhansi for around education and to develop the scientific habits is an attempt in education science.*

I welcome this opportunity to express my thanks to

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(Yatendra Singh Kushwaha)

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CHAPTER- I

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CHAPTER- I

INTRODUCTION :

The teaching process is inferent to society. There has been a vast change in the quality of this activity since the beginning of the human race. According to the changes in the process, the inter-relationships of the participants in this programme have also changed. The teacher is considered as the kingpin of the whole process. In the olden days, he was the most venerated person in society. Even in the early twentieth century the teacher was a venerated member of society. It is in the later period of the twentieth century that the teaching profession is losing the exalted status in society and has to face severe criticism. It is not that other professions are not having similar deficiencies, but they do not come in for such critical appraisal. The expectations from the teachers work are more articulate and so they come in for free criticism. The aim of educational research is now oriented in identifying the lacunae in the educational system and to try and find solutions for it. The new Education Policy is one of the concrete steps in this direction.

One of the major projects of the New Education policy is the special training programs and refresher courses organised for teachers. These plans have been proposed on the consideration that it is the existing group of teachers who are in need of immediate attention. They are already in service

and will remain so for a considerable period too. They come into contact with the new generations year to year. The deficiencies of their work will be reflected in the development to the children. So it is logical to start the improvement programs with these groups of teachers. The newer generation of teachers have the benefit of the modified pattern of training. So we can expect them to be better able to carry out their responsibilities because there will be no handicap of previous training or habit. All this has been planned on the basis of the importance of the teacher.

1.2 PLACE OF TEACHER IN SOCIETY :

The National Policy on Education 1986¹ States :

"The status of the teacher reflects the socio-cultural ethos of a society. It is said that no people can rise above the level of its teachers. The Government and the community should endeavour to create conditions which will help motivate and inspire teachers on constructive and creative lines. Teachers should have the freedom to innovate, to devise appropriate methods of communication and activities relevant to the needs and capabilities of and the concerns of the community."

The above statement shows that the teacher is considered not only important in the educational field but also

1. The National Policy on Educational 1986 published by the ministry of Human Resource Development, Government of India (Development of Education), New Delhi, 1986.

for society. If we look back on the history of the world, we find that the teacher has held a very high, in fact, in many periods of time, the highest place in the hierarchy of societal status. He has always been the instrument of change. Every change and progress in society has been either the direct result or the final result of the impact of the teacher on the pupils. Naturally whenever we think of any consideration of society and any implications in the context we are consciously or unconsciously considering the effect of the work of the teacher.

The conduct of a society depends on the way the members of that society carryout their responsibility. These members have been made fit to carryout their responsibilities and the manner of its execution is only the result of their education. Education is the result of the teachers' efforts. Thus the teacher is the kingpin of society. The teacher's work is considered the mainspring which regulates and controls society in all its manifestatins. In essence we can assume that the work of the teacher is very important for the welfare and progress of society.

1.3 TEACHER EFFECTIVENESS AND TEACHING EFFICIENCY :

There are many ways in which any work can be performed. But all these ways do not necessarily have the same success. Some ways are the path to quicker and better results while others sometimes do not lead to the desired goals. This can be taken to be the efficiency we associate with any human

activity. The teachers' activity of teaching being so important, the quality of his work, i.e. efficiency is a very important factor of educational planning. Educational planning involves not only the decisions regarding educational aims and its various components, but one of the main concerns is the training of teachers. The training of teachers involves the development and practice of qualities required for the efficient work of the teacher. The knowledge explosion and the variations in the pupil population from generation to generation requires certain modifications in the quality of performance of the teacher's work. It is this quality in the teacher which enables a teacher to be consistent in the quality of development of the pupils taught by him/her. In simple words we can say that the efficiency of a teacher must be maintained. There cannot be any laxness in the quality of the work of the teacher. Naturally when we want to analyse the shortcomings of any educational enterprise our first point of investigation is the efficiency of the teacher.

Efficiency is the ratio of output to input. In relation to the teacher's work efficiency is considered to be the quality and quantity of acquisition of knowledge in the pupils. The measure of this acquisition of knowledge of the pupils is generally taken as the performance of the factors affecting the performance of pupils in examinations, so a more reliable measure has now been conceived and has been proposed for measurement of efficiency. The quality and level of certain

characteristics in the teacher have been identified as being associated with teaching efficiency. This has enabled researchers to measure the efficiency of teachers. In fact, most of the work in the field of research on teaching efficiency has been conducted for construction of tests for measuring teaching efficiency on the basis of such characteristics. Jayamma (1962), Prasad (1970), Debnath (1971) are people who conducted researches related to teaching efficiency and the main results of their work are discussed in Chapter-II.

Measurement of efficiency alone cannot give a clue to where remedial measures are needed. The factors involved in the establishment and continuation of efficiency have to be identified. The nature of these factors can tell us where remedial measures have to be introduced.

1.4 TEACHING APTITUDE AND TEACHER'S PERFORMANCE :

Besides the training given to teachers for ensuring efficiency there are two other factors which contribute both to efficiency and the maintenance of continued efficiency. One of these is Teaching Aptitude and the other the experience of the teacher. Aptitude has been defined by -

- (1) "Aptitude may be defined as the potential to master a specific series of skills."²
- (2) "An aptitude may be defined as person's capacity or hypothetical potential for acquisition of a certain more or

less well defined pattern of behaviour involved in the performance of a task with respect to which the individual has had little or no training."³

Thus aptitude tells us whether the teacher has the innate qualities for teaching. This aptitude ensures that with proper training efficiency will be ensured. In fact the latest pattern of B.Ed. entrance examination has been changed to include measurement of aptitude of teacher trainees. The efficiency of out future teacher in regard to aptitude is assured. But the teachers selected for training till now and those who are actually in the profession have not been tested for teaching aptitude. Thus a study of the teaching aptitude of these teachers can tell us whether there is scope for better efficiency in the teacher or not. For, if the inherent quality of aptitude is not present, then any amount of training cannot give the full desired result.

1.5 TEACHING EXPERIENCE AND TEACHER'S PERFORMANCE :

The other factor viz. experience is effective in relation to efficiency as the effect of practice. with practice all the initial fumbings and indecisions are smoothened out. By repeating an activity the method or performance generally improves, i.e. the worker becomes more efficient. Naturally it would be expected that an experienced teacher would be more efficient than a less experienced one. Hence when we try to estimate the quality of efficiency of teacher the factor of experience

can also be an indicator of the manner and kind of remedy to be applied.

1.6 ASSESSMENT OF EFFICIENCY AND APTITUDE :

Most of researches till now have been conducted on either various attitudes of teachers or on teacher trainees. The studies on qualities of teachers in service have been few in relation to efficiency. Today the teaching profession is in a sad state, the teacher, the taught and the society are all dissatisfied. One of the first factors that comes to mind is to investigate the quality of the teacher's work. Various agencies have organised special short term and long term refresher and special training courses for all secondary level teachers. A study of their aptitude and efficiency can tell us whether we have been successful in these endeavours and how far we have achieved our target. Actually remedial measures are needed more for the teachers already active in the profession. So the present work has been conceived to study the teaching aptitude and efficiency of teachers active in the profession.

1.7 APTITUDE EFFICIENCY AND APTITUDE :

When we look back to the selection of teachers in the olden days and in fact in the earlier twentieth century we rarely come across the comment that a teacher is in efficient. One of the reasons for this is that teaching was a highly selective profession of a choice. Only those people with a genuine dedication and love for teaching came into the profession. This love and deduction can be understood as owing, at least to a large extent, to the existence of teaching aptitude in the

teachers. Another reason for having only efficient teachers was that education was restricted to a few and not universal as it is now. Students and their guardians were also selective to the type and level of education. Education was not free or compulsory for all. Thus we had more ideal conditions. Today our democratic attitude has widened the scope of pupils accepted for educations. This in turn has increased the number of teachers needed. In addition the increasing industrialisation and vocationalisation trends in society have given a different slant to the quality of work of the teachers. Initially the teacher's work emphasis was on the academic aspect of the subject. It is now oriented towards the more practical application of the subject. Naturally the teacher who was efficient 20 years back will not be efficient in today's circumstances. This circumstance can be adjusted to if the teachers have the quality of adaptability to changing circumstances. The refresher programs, special training programs all help the teacher to be aware of the changes that are being implemented and also how to adopt to them. So a study of the efficiency of the teachers of various experience groups can indicate how they have responded to the training programs.

1.8 SELECTION OF THE PROBLEM :

The above consideration point out that the first area to be investigated in the field of Education is research related

to teachers: in trying to find out the quality of the result of the teacher's work the three basic factors that seem to have priority are teaching efficiency, teaching aptitude and experience. In the present study these three factors have been chosen for investigation. The teachers selected are from Higher secondary college. The title of the project is as given below :

1.9 STATEMENT OF THE PROBLEM

" A STUDY OF THE TEACHING EFFICIENCY AND TEACHING APTITUDE IN RELATION TO EXPERIENCE OF MALE AND FEMALE ARTS AND SCIENCE TEACHERS OF INTERMEDIATE COLLEGES OF JHANSI MANDAL JHANSI."

1.10 IMPORTANCE OF THE PROBLEM :

All research work if worth while must have some contribution to the field of research. The problem that we are facing now in unsucccess of the secondary education. The vast population explosion and the increasing incidence of students not achieving proper educational aims at the secondary level is a very serious problem. Also the knowledge explosions is necessitating quick finite practical suggestions and implementations of change in the existing system. The new education policy has put forward the special training programs for teachers in service to improve their efficiency. But unfortunately no appreciable improvement is visible. Actually

before trying to implement a new plan it is better to study the actual situation. We must know the ability and efficiency of the teachers who are in the actual teaching activity. Are they having efficient potential to benefit by the new special programs. The aptitude testing can give an indication of the ability of the existing teachers to adopt new techniques and modify their methods. For example many of the older teachers having 21 years of experience might be too rigid or set in their ways and not be able to adopt to newer ways. But having near about 10 years more of service their shortcomings will affect 10 groups of children. But in interest and aptitude will make them more responsive to newer practices.

The study of the efficiency can give a clue to the basic nature of the educational system for proper remedial measures. The B.Ed. and L.T. programs are improved and modified, on the findings of the study of the defects in the existing teaching process. So we can expect better teaching efficiency and aptitude in the newer teachers. Efficiency is also the result of practice so in the course of time we expect a teacher to learn by his experience and improve the general standard of teaching. But this depends to a certain extent on the interest of the teacher for the job. There are a very few teachers who have come into the profession with a dedication for it or a keen interest in it. So the natural course of improvement with experience may be lacking. But when the profession is able to satisfy the needs of the teacher and habit can develop a healthier attitude in the

teacher and thus increase the application and therefore efficiency of the teacher.

A study of the teachers aptitude and efficiency of teachers of different experience periods can give an indication of where to start our reformation programmes. It is logical to suppose that the last group of most experienced teachers should be the place where to start our programs for improving teaching process. As already explained this may or may not be true. This project is an attempt to find out which group of teachers must be given the priority in improvement programme. It can tell us also whether the fault lies in lack of aptitude or not etc.

This research project can give two kinds of information. Firstly it can tell us what is the quality of efficiency of the teachers who are already active in the process of teaching. It can also tell us if the lack of testing of aptitude at the time of appointment has any relation to efficiency. Secondly it can indicate at which level the corrective measures have to be induced first.

Experience while it adds to efficiency by the removal and resolution and sublimation of difficulties, it can also be a deterrent to change. It can cause rigidity in habit. The mark of a teacher can never be carried out on a strict military order. Each generation is different from the other. There is a continual knowledge explosion causing differences in the approaches to

teaching a subject. All these required flexibility in the teacher to new requirements. The problem therefore is to find out if the teacher is able to change according to need or not. Experience can help the teacher in understanding the need for adaptability to changing needs. This knowledge can not only give a clue as to what remedial measures are to be instituted but it can also tell us what kind or radical measures will be suitable. In one of the reasons why the remedial measures so far used as special training programmes etc. have not provided effective is because the effect of experience on the teachers has not been considered. If they had initially tried to estimate the adaptability of the teacher to new innovations and tried to implement the new approaches in accordance may be the results would have been more satisfactory.

DELIMITATION :

The area of any research work is bound to be wide if all the effective factors are studied. The need therefore is to decide what are to be selected for study and what are to be controlled and what can be omitted.

Out of the various people involved in the teaching process the administrations, the principal the teachers, the non-teaching staff, the students and various other members of society who are connected with the teaching process, the teacher has been selected. The teacher is the pivot of the learning set-up. The others are created by him. They are the

results of his educational activities so priority has been given to the teacher in the selection of the object for research in educational field. As already expressed sex of the teacher is another factor that has been values into consideration. There are other qualities which can be effective in the work as a teacher. It is assumed that some of these are the academic achievement of the teacher, the pattern of academic achievement, the socio-economic condition of the teacher, the family and cultural background, the reasons for selection of the profession etc. These are more or less the same among teachers of Higher Secondary Institution so the study of these factors was not included. Similarly there are many characteristics of teachers that are associated with teaching process. Personality characteristics like extra version, introversion, ascendancy submission, intelligence etc. Two main characteristics aptitude and efficiency along with experience were the only factors considered in this work.

For various reasons of time, money and every, the scope has been restricted to the following areas of study :

1. Teachers of Higher Secondary level of Jhansi Mandal, Jhansi.
2. Teachers of both sexes.
3. Teachers of only two faculties arts (humanities) and science.
4. Experience groups of three periods.

HIGHER SECONDARY LEVEL :

There are 3 levels of education. Primary, Secondary and higher. Primary has not been taken for study as the children involved are of 6 to 11 years and are not at a very problematic stage. At this stage the child is educated with the aim of acquiring a minimum of basic knowledge. It is a clean plate to start with and help through parents is more easily available at this stage. The secondary stage is divided into two the first Junior High School of VIth to VIIIth class. The second stage of 4 classes 9th to 12th the Junior High School stage the pupils are of 11 to 13, 14 years of age. This is also a relatively quiescent period in the development of the child, so does not have as many problems as the higher secondary stage of High School and Intermediate of classes from 9th to 12th.

At the higher secondary stage the child is at the adolescent stage; which its own emotional problems. Besides these development problems of the child, educationally also this a very crucial stage. The diversification begins at this stage the decision of which direction the future education of the child should take is taken at this stage. The type of success at this stage is responsible the whole future career and life of the pupil. It is the bottle neck which if crossed assures future success. So it is clear that the problems of the Higher Secondary level especially the teachers there is more vital.

SEX :

The child's first and strongest bond is with the mother. In fact all the personal needs are related to the mother. The father is more important in the establishment of relationships outside of the family. Learning is more or less an internal phenomenon for the child. So when a female teacher is given the responsibility for teaching the child, the acceptance is more satisfactory than for a male teacher. The female teacher takes the mother form while the male teacher is a father form. So the impact of a male or female teacher can be different so naturally their efficiency can also be expected to be different.

The teaching learning process involves emotional rapport. It is evident from the study of the psychology of sexes, that the physical differences in the sexes, their different roles in the frame work of society and in the life of a child have different emotional impact on the development of the personality of the child. So we can assume that there can be difference in the efficiency sex. This has been accepted in educational planning as is evident from the total exclusion of male teachers in the nursery grades. In fact in countries like India where segregation of the sexes is still very rigid, male teachers are still appointed for boys in primary schools. It has been shown that for subjects which have an emotional impact on the child like literature (expecially poetry) arts etc. Women are generally to be preferred to men. For teaching subjects

such as mathematics, Science, Physical training etc., men are preferred, may be this due to the attitude that science and mathematics are the domain of males and females are generally deficient in this area. In other countries the preference is given to females upto the higher secondary level. In fact the teachers upto the primary level (upto 5th) are generally all female. At the secondary stage teaches of both sexes are acceptable. In India according to our commissions, the proposal is that even in the rural areas we should try to develop in the community the need for female teachers at least for a few subjects till the higher secondary level. This will have a two fold benefit. One ofcourse is that we will have teachers who can be more efficient. The other is that in the rural areas this will free the men for the heavier work in the field. Another benefit is that it will encourage the female rural population to acquire education. It will give a useful fulfilling occupation to the educated women of rural India. There is now a visible growth in the incidence of female teachers at all levels of education in India. So it seems logical that when we take up the study of any problems in the fields of teaching profession the sexes have to be taken into account. In the urban areas it is now become a necessary almost for all women in the middle class of society to become wage earners. Teaching is the most acceptable vocation for them in society, so the number of female teachers is on the increase.

FACULTIES- ARTS AND SCIENCE :

At the beginning of the Higher Secondary stage the courses are divided into 7 streams. But the two commonest faculties of maximum pupil strength are the arts and Science streams. These are therefore the logical choice in the priority of selection of streams.

EXPERIENCE GROUPS :

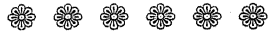
Generation to generation, there is difference is not only the inherent qualities but in the whole pattern of society. So it is evident that both the teachers work and work conditions will differ from generation to generation. So the two extreme spans of upto 10 years of experience and above 20 years of experience have been chosen for the period of experience for the teachers to be chosen as sample. The intermediary group of teachers of 11 to 20 years is also included in the study. Thus we have 3 experience span of service for selection of teachers. First group of teacher of upto 10 years experience. The second group having 11 to 20 years and the third group having 21 years and above experience.

1.12 OBJECTIVES OF THE STUDY :

The objectives of this work are as follows :

- (1) To study the aptitude of the 12 groups of teachers.
- (2) To study the efficiency of the 12 groups of teachers.

- (3) To find the difference in aptitude due to sex, faculty and experience level.
- (4) To find the difference in efficiency due to sex, faculty and experience.
- (5) To study the relationship between teaching aptitude and teaching efficiency.



CHAPTER- II

- 2.1 Introduction
- 2.2 Research in Education
- 2.3 Trends in Research (Edu.)
- 2.4 Contribution of Related Literature Survey
- 2.5 Efficiency
- 2.6 Aptitude
- 2.7 Experience
- 2.8 Sex
- 2.9 Faculty
- 2.10 References

CHAPTER- II

2.1 INTRODUCTION :

It is the survey of literature which forms the first step in the selection of the research problem. The survey of work done previously is helpful in identifying the areas of research in any particular field, in helping to select the particular area of study and finally to decide on the different variables that can be selected for the purpose of the study. It also helps in assessing and evaluating the results.

A study of the related literature in Education showed that when we want to study any educational problem, then the first point of consideration is the teacher. The subject for this study naturally, was the teacher. In view of the secondary level education being the most problematic, the higher secondary teachers were selected for this study.

"An essential aspect of a research project is the review of related literature... the survey of the literature is crucial aspect of the planning of the study and the time spent in such a survey invariably is a wise investment."¹

Dr. M.B. Buch² in the overview written in his collection of Ph.D. work writes about research on teachers in the following words :

"Although educational research at Ph.D. level started in early 40's repid growth is witnessed during the last two decades. Upto 1950 two universities viz. Bombay and Lucknow together produced nine Ph.D.S."2

2.2 RESEARCH IN EDUCATION :

Educational research at Ph.D. level started expanding with more and more universities providing such facilities. After 1950 the coverage of topics for Ph.D. has considerably expanded and researchers have taken increasingly greater interest in taking up research problems that are psychological in nature.

Table 2.1 : Trends in Educational Research

Years	Areas	
	Teaching and Teacher Behaviour	Teacher education
A : Ph.D. Studies		
Upto 1950	-	-
1951-1955	1	-
1956-1960	-	-
1961-1965	2	4
1866-1970	2	12
1971-1972	9	7
Total	14 (0.47)	23 (6.7)*

B : Non-Ph.D. Research Projects

Upto 1950	-	-
1951-1955	-	-
1956-1961	1	3
1961-1965	1	4
1866-1970	2	12
1971-1972	-	3
Total	4 (1.5)	19 (7.1)

*Figures in brackets are percentages.

2.3 TRENDS IN RESEARCH (EDUCATION) :

The actual place that teaching and teacher behaviour occupies in the total education process is not reflected in the amount of research produced in the area. Jangira and Sharma³ after reviewing the researches came to the conclusion that it has been a comparatively neglected area of Educational research.

Lalla and Singh⁴ reviewed twenty seven doctoral studies and reports of nineteen research projects completed in India so far in the field of Teacher Education. The studies have been classified by them as (a) selection Criteria, abilities and qualities of teachers, (b) Preservice and interservice training of teachers, (c) work load, job expectations and difficulties experienced by teachers, (d) procedures and policies of teacher education in India and (e) personality variables of teachers.

It is felt from the review of these studies that the themes have often been repeated by some investigators on different samples and in different geographical areas. Most of the studies are descriptive in approach using historical development. Survey through questionnaire and interview techniques. There is no study which covers the whole country in any single aspect of Teacher Education. From the report it is clear that several areas remain unexplored by researchers in the field.

The first authoritative review of research in education has been done by a committee appointed by the University Grants commission in 1966⁵. The committee members have expressed that not only research in education was of a poor quality but it neglected many important fields.

2.4 CONTRIBUTION OF RELATED LITERATURE SURVEY :

The survey of related literature is the first step in any research work. A survey of the related literature was helpful in firstly deciding the area of research. The educational setup has three major concerns- the pupil, the teacher and the curriculum. The decision to choose the Higher Secondary teachers of both sexes and the two main faculties of arts and science was the result of the study of the work already done in the field. The selection of the variables also is the result of analysing and identifying the importance of the different characteristics associated with the teacher in relation to the performance of the teaching activity.

As a result of the study of related literature the variables chosen for study were teaching aptitude, teaching efficiency and experience. Teaching aptitude is the inherent quality in the teacher, teaching efficiency is necessary achievement and experience is related to the existing variations of groups.

After selection of variables the first step in research is to clarify the concepts involved in the research work and to assess the relevance of the topic.

2.5 EFFICIENCY :

Scientific studies of all human activities have shown that the very essence of human existence is progress. Life, if not active, is death. Life is a continuous process. Another aspect of human life is that it is always aimful and the aims are for improvement in as many areas as possible. In simple words we can say that all endeavours of making are oriented towards efficiency. Efficiency can be understood as the quality in the performance of a task which improves the quality of the results achieved by that task. We try new techniques, new methods, new approaches so that the goals achieved are better.

Efficiency- 1. Ratio of energy expended to work done in a mechanism, 2. Minimum time or energy expended for maximum accomplishment 3. (Single detection theory) the square of the ratio of

the empirically detectability index for the ideal
theoretically maximum performance.⁶

$$N + \frac{(d \text{ observed})^2}{(d \text{ ideal})}$$

The quality of this efficiency is ofcourse different for each type of activity. The efficiency related to the teaching profession is called Teaching Efficiency. Teaching Efficiency can be understood to be the success of the teacher in imparting a certain desired amount of knowledge to the pupils. The next question that arises is what are the connotation of teaching efficiency. Actually the teaching process involves the impact of the teacher on the pupils. Hence, in essence teacher efficiency can be estimated as teacher effectiveness.

"The evaluation of the professional staff in a school district is often one of the most difficult projects that an administrator or supervisor faces in the course of his duties. Nonetheless it is vital that teachers on a staff are aware of their competency and of the areas of their work that requires attention if they are to reach a level of performance that is acceptable to the school district."⁷

The statement shows that competency measures are necessary not only from the point of view of the administration but it is also important for the teacher.

Competency is one of the factors for efficiency and effectiveness.

"The importance of educators of being able to recognise teacher effectiveness has long been acknowledged, in fact, this was one of the first problems over to be studied by educational researchers. As a result, research in teacher effectiveness has been going on for almost a century This article will be concerned primarily with the logical problems- with elucidating what the term "Teacher Effectiveness" means and how its meaning relates to that of related terms such as "Teacher Competence" and "Teacher performance" from which "Teacher Effectiveness" is sometimes inferred.⁸

"The term "Teacher Effectiveness" will we used to refer to the results a teacher gets or to the amount of progress the pupils make towards some specified goal of education. One implication of this definition is that teacher effectiveness must be defined, or can only be assessed in terms of behaviour of pupils, not behaviour of teachers. For this reason, and because the amount that the pupils learn is strongly affected by factors not under the teacher's control, teacher effectiveness will be regarded not as a stable characteristic of the teacher as an individual but as a product of the interaction between

certain teacher characteristics and other factors that vary according to the situation in which the teacher works."⁸

The first recorded study of Teacher effectiveness (Kratz 1896), one of the earliest pieces of educational research to appear, set a design precedent that was to be followed for many years. These researches identified the presence of 25 characteristics in a teacher which were essential for effective teaching. The structure for teacher effectiveness, as given by Mitzel has been given in Appendix III A. He has also pointed out which of these are developed by training and which are inherent.

The review of related literature in the field of teacher efficiency has revealed that the work that has been done so far is mostly related to the Construction of tests for measurement of efficiency. Jayamma⁹, Prasad¹⁰, Sharma¹¹, Bannerjee¹², Mehta¹³, Joshi¹⁴ and Upadhyay¹⁵ have studied efficiency for the primary level. The concentration has been towards construction of tests for efficiency and standardising it.

Deva¹⁶, Jangira¹⁷, Kulandaival¹⁸, Manual¹⁹, Mehta²⁰, Roy²¹, Suraj²², and Thakkar²³ have studied efficiency as a predictor for teacher trainees, success of teacher training programmes, effectiveness in relation to rapport with students, job satisfaction and relationship with students etc.

Debnath²⁴, Samantha Roy²⁵, Anand²⁶, Bhattacharya and Shah²⁷, Kaul²⁸, Arora²⁹, Balchandran³⁰, Sinha³¹, Sohoni and others³² and srivastava³³ have studied efficiency

of secondary school teachers. Debnath, Bhattacharya and Shah, Arora, Balchandran have constructed tests for measurement of efficiency while Sinha has studied the impact of Education programmes on the professional efficiency of teachers. Kaul has studied efficiency as one of the factors of personality variables of a special group of teachers (Popular). Samantha Roy, Anand and Srivastava have studied efficiency in relation to attitude, projective techniques and frustration respectively. So far no one has considered the relationship of efficiency with aptitude or faculty or sex.

One aspect 'competency' of effectiveness has been studied by C I I L³⁴, Mathew³⁵, Passi and Sharma³⁶, George and Joseph³⁷, Patel³⁸, Tareen³⁹, Agarwal⁴⁰, Paikaraj⁴¹, Yadav⁴². They have all studied teaching competence at primary and secondary levels. C I I L, Mathew and Agarwal have constructed tests. Mathew has studied competence in relation to class room behaviour. George and Joseph, Anand, Patel, Paikaraj have studied teaching competence in relation to micro-teaching.

All these studies show one particular approach in studying teaching efficiency. More importance is given to it as a predictor and the impact of various factors such as attitude etc. have been given recognition. But no work has been done to study even the efficiency of teachers settled in their service for a long period of time.

The above list shows that work in the area of teaching efficiency are very few. Considering that most of our in service and other training programmes are all oriented toward improving the teaching efficacy, this area has not attracted sufficient attention in the field of research. In fact, a study of the efficiency of teachers is one of the best means to identify the shortcomings of a teacher. Measuring the predictable effectiveness of future teachers is only a safeguard for the future. But the present problem is to improve the efficiency of the teachers already in the profession.

Study of international work has also revealed a lack of analysis in this study of efficiency. In fact, in foreign countries efficiency is a foregone conclusion because the very process of selection of teachers and their training programmes are specially organised so that a high level of efficiency is assured. The selection of the teacher trainees and the allocation of teaching responsibilities are all done after an assessment of the personality and study of the quality of ability of the teacher. The whole system is setup so that any drop in efficiency is immediately evident and measures to rectify it are taken without unnecessary loss of time or red tapism. The defects of our secondary education point out a glaring lack of efficiency. Hence this study is an attempt to find out if the lack is due to some quality not in the teacher or in the system of organisation.

2.6 APTITUDE :

Aptitude has been described as follows⁴³

"An aptitude may be defined as a person's capacity or hypothetical potential for acquisition of certain more or less well defined pattern of behaviour in the performance of a task with respect to which the individual has had little or no previous training."

In the Dictionary of Behavioural Sciences, Aptitude has been defined as⁴⁴

"Aptitude : Capacity or potential ability to perform an as yet unlearned task skill or act."

"Aptitude, as a construct refers to psychological characteristics of individuals that predisposes and thus predict differences in later learning under specified instructional conditions."⁴⁵

"Aptitudes may be defined as the potential to master a specific series of skills."⁴⁶

the above definitions show that one of the qualities needed for any activity is aptitude. If we want any work to be performed efficiently then there should be an aptitude for that task in the performer. So we can conclude that for teaching, Efficiency the presence of teaching aptitude is helpful, and essential. A measure of the teaching aptitude can throw light

on the inherent deficiencies of the teaching . We have been changing the norms and patterns of selections of teachers and teacher trainees. But it is only since the last couple of years that aptitude test has been included in the selection of candidates for teacher training programmes. The newer generation of teachers are sure of having a better chance of being efficient teachers due to previous aptitude testing. At the same time the teachers who have not been selected on the basis of their aptitude have to be re-evaluated on this factor. Examining the aptitude of the teachers already working will be helpful in understanding the quality of teachers in service. A measure of their aptitude can tell us where the shortcomings are. We can know whether the deficiency is due to their lack of aptitude or some other reason. Practice also removes a lot of deficiencies. So we can assume that by giving sufficient training we can remove, in part, at least the lack of aptitude in achieving desired efficiency. A measure of the aptitude is also helpful in identifying the proper field of work of the teacher. It can tell us whether the type of work allotted to the teacher is suitable to his abilities or not. Attention to this aspect of teaching has been lacking in research work. Only a few researches have been done so far in this field.

Pandey⁴⁷, Pandaya⁴⁸, Shah⁴⁹, Sharma⁵⁰, Sherry and Patel⁵¹, have all constructed instruments for measuring aptitude. In fact the study of aptitude either as a predictor or as a characteristic for identifying the lacunae in the teacher

has drawn no attention in research. May be it has been accepted that aptitude is one of the factors for efficiency, effectiveness and competency. Considering the importance that is given to teacher aptitude in the selection of teachers it seems logical to study the relationship between efficiency and aptitude.

2.7 EXPERIENCE :

"Experience is the period for which a person has been carrying out the particular task, i.e., the number of days months etc. during which the person has been involved in the performance of that task of similar tasks."⁵²

Experience is one of the factors which is effective in the manner in which a task is performed. Repetition of a task gives a certain amount of practice which is helpful in improving the manner of its performance. In fact, experience is the preface to habit formation. Experience is that process by which a person in repeating a task is first able to identify the deficiencies in the performance of the work. Then it helps in improving the manner of performance of task by practice. Since efficiency is related to the way an activity is conducted, it is clear that it is also related to experience. In short we can say that a person with more experience will be more efficient than one with less experience. But in actual practice this has not always been found to be true. The reason being this lies in the attitude of the person towards the task being performed. If

there is interest in the performer in the task, then with experience we can expect an improvement in the quality of performance. But if there is lack of interest in the task, then boredom and finally carelessness in its performance can result. Also an unvaried repetition of a task can create a dislike towards the task and reduce the enthusiasm necessary for good performance. Thus experience can be both an asset and a detraction so far as efficiency is concerned.

Jogelkar⁵³, Gupta⁵⁴, Mani and Gonsalves⁵⁵, Mann⁵⁶, Saraswat⁵⁷ and Satpathy⁵⁸ have considered experience in their work. Joglekar Gupta, Mann and Saraswat did not find experience significant in the performance of teachers. Mani and Gonsalves, on the other hand, found better self concept and relations with students with experience. In fact, a longitudinal study can give the correct relationship of experience with the teachers performance. But a study of teachers of different periods of experience can give firstly a clue to the place where remedial measures are to be instituted. Then it can also tell us whether our conditions are congenial for the teacher' work, correlating the training programmes and manner of selection of the various experience groups of teacher it is possible to get an idea of the changes that would be suitable in the selection and training programmes.

2.8 SEX :

Sex is an important factor in all situations wherever human emotional relationship are involved. The emotional

report is an essential characteristic for good and successful teaching. The emotional involvement of males and female are different. Psychology has pointed out that in the early stages of education the preference is for female teachers. Even upto the secondary stage the suggestions have been in favour of giving females preference over male teachers except for a very few subjects and especially as India is male dominated society. Sex discrimination is being strongly opposed now. Where there is no sex discrimination women come out more successful than men. In India it was found that except in the villages, most of the english medium Schools where co-education was permitted, the teachers were mostly women.

Aptitudes are also known to differ in relation to sex. It is, therefore, logical to study differences due to sex especially in relation to research in educational process etc. One of the factors that has been chosen for the study is sex. Both male and female teachers have been selected for study. The following are some of the studies that have been carried out in this fields.

Sex is a variable which is significant in certain contexts and not significant in other context. When we give same importance to both the sexes, treat them equally and impartially, it is obvious that areas where sex differences are significant be identified. By doing this it will be possible to try to fit in persons of suitable sex for the appropriate spheres of activities.

Chitnis⁵⁹, Rasool and Suri⁶⁰, Pathak⁶¹, Pillai⁶², Gnanambal⁶³, Acharyalu⁶⁴ found significant differences in scheduled caste pupils and other in sociological aspects. Marr and Gupta⁶⁵, Banno⁶⁶, Chand⁶⁷, Singh⁶⁸, Kantawala⁶⁹ and Satyandan⁷⁰ found no significant difference due to sex in image of self, parental press at various socio-economic levels, correlates of vocational maturity, reading attitudes of high school students, socio-economic status and academic achievement. May be this was because the sample taken was of adolescent children.

jaiswal⁷¹ studies creativity of teachers traomees and found female teachers to be lower in this respect than males in science but higher than males in arts. Mohanty^{72A} also found 'males' performance in class higher than females.

Saraswat^{72B} in his study of trained High School teachers found that there was significant difference in male and female teachers and arts and science teachers but not due to experience. This is in agreement with the previous work listed. The difference in attitude due to sex deference is logical because the emotional structure of males and females is different. Also in certain areas women are more capable than men.

2.9 FACULTY :

The last factor that has been considered in this work is of faculty. For relation to the future, the higher secondary

syllabus has been divided into seven streams. Each has its own particular future prospect. Out of these the two major streams which are still continuing in their importance are the Arts and Science faculties. Arts faculty includes the subjects which come under the Arts-language and social sciences etc. Under the science faculty there are the pure science subjects which later on lead to study of scientific subject and related course. The method of study, impact of the study on the pupils etc. are quite different in these two streams. It is therefore, justifiable to take this aspect also as a characteristic to be studied. Research in psychology and Education have revealed that the aptitude and efficiency associated with each subject is different. In the Indian Institutions allocation of subjects for teaching are not necessarily those for which the teacher has an aptitude. It is natural that their efficiency may not necessarily be good if their aptitude is not for the subject they are teaching. The difference in efficiency of science and arts teachers have been given some thought. Work has been carried out to study the difference between them on many aspects. But the relationship between aptitude and efficiency in the context of arts and science faculties has so far not drawn any attention. This is an important aspect as it is now realised that both subjects have not only their own individual importance but the development in both subjects is essential for the overall development of the pupil.

The inclusion of compulsory general science, increasing involvement of science in human life

industrialisation etc. have increased the importance of science teaching and therefore of science teachers. But arts subjects cannot be neglected in comparison. In fact with the increasing complexity of human life arts subjects are also having increasing significance. Language of course is the important means for establishing proper communications and expressions (science and mathematics require exact presentation). Arts is very important tool for the treatment, identification and understanding of personality problems and a thereapy for many kinds of physical ailments too. of the seven streams-humiliates (arts), science, commerce, agriculture, technical, home science, the two streams of arts and science are still not only the most common but have the maximum number of students enrolled in these classes. Streams like commerce and agriculture call for an earlier decision for vocational choice than these two streams. A switch over from arts or science to the other streams is accepted but not vice versa. Most studies have been carried in relation to special problems of teaching of arts or sciences subjects but only a very small number have been carried out to study the differences.

Exammal⁷³, Khajuria⁷⁴ have studied teaching efficiency in relation to the teaching of Botany and Mathematics. Kirkire⁷⁵, naidu⁷⁶, and Kumar⁷⁷ have studied the impact of classroom behaviour on the achievement of pupils in Mathematics, Science and Social Studies. In view of the increased staff strength and their specialisation, research

work has been strengthened in other areas also such as educational management higher education, sociology of education and science education. Research has been carried out in various areas related to science achievement, aptitude, educational equipment, curricula, ability, text books and teaching etc. Its relationship has been studied with various factors of personality, but these are mostly concerned with pupils and not teachers.

In conclusion we can say that a work of the present kind is one of the necessary researchers in the field of secondary education. It can atleast point out the place where we should attempt remedial measures as well as the kind of remedy to be used.

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CHAPTER- III

- 3.1 Research Methodology
- 3.2 Hypothesis
- 3.3 Sample
- 3.4 Tools
- 3.5 Verma's Test for Testing Proficiency
- 3.6 Teaching Aptitude Test
- 3.7 Collection of Data
- 3.8 Statistical Techniques

CHAPTER- III

3.1 RESEARCH METHODOLOGY :

Research does not end with the selection of the problem and its delimitation. The main part of a research project is to draw up a research design and plan the sample, tools and statistics to be applied.

"By Resarch we mean activity aimed at increasing our power to understand, predict and control events of a given kind. All three of these goals involve relationships between events or variables. We understand an event by relating it logically to others. We predict an event by manipulating the independent variables to which it is functionally related. Hence in the long run at least research must seek out relationships between variables."¹

The above views expressed by Dr. N.L. Gage point out that Educational research is not a haphazard activity but a planned scientific procedure. Actually research is simply the process of arriving at a dependable solution to problems through the planned systematic collection, analysis and interpretation of data. Educational research can be defined as the systematic and scholarly application of the scientific

1. Handbook of Research on Teaching by Dr. N.L. Gage, A Project of the American Education Research Association, Page-6.

method, interpreted in its broadest sense to the solution of educational problems. The term educational research should likewise be restricted to systematic studies designed to provide education with more effective means of attaining worthwhile educational goals.

In the present research project the research design is of Ex-post-facto cum field study. In the above design, the control of variable is not much required.

In the present study the independent variables are sex, faculty and experience (of 3 levels) and the dependent variables are teaching efficiency and teaching aptitude.

3.2 HYPOTHESES :

To establish relationships the following hypotheses have been framed for testing their significance:

- (1) There is no significant difference in the groups according to sex.
- (2) There is no significant difference in the groups according to faculty.
- (3) There is no significant difference in the groups in regard to sex or faculty when the groups are divided according to experience.
- (4) There is no relation between teaching efficiency and teaching aptitude in the different groups.

3.3 SAMPLE :

In general research project are conducted on a part of a population due to various reasons. this selection of the population for study is called sampling.

There are many accepted methods of sampling depending upon the nature of the project. In this work stratified random sampling method was used. It is stratified because there were conditions to fulfil before selection of the sample, viz. sex, faculty and experience.

first the schools were selected by random sampling by the lottery method. the list of schools selected is the appendix No.-4.

A sample of 560 teachers were selected according to criterious. a larger sample than actual for study was selected only to meet the non-cooperation drop outs and incomplete responses by the teachers selected for the sample. The study has been conducted on a sample of 480. out of it 240, female teachers of intermediate college of jhansi mandal jhansi. The above groups on the basis of sex were further divided in to two groups of faculty- Arts and sciences. From each faculty of each sex 120 teachers were selected. These were further subdivided on the basis of experience span in to 3 groups viz (1) upto 10 years, (2) 11 to 20 years and (3) 21 + years.

TABLE 3.1 : SAMPLE SIZE

A ₁ Males	Experience			Total Males				
	Experience	Experience	Experience					
	Upto 10	11-20	21+					
Arts	B ₁	A ₁ B ₁ C	40	40	40	A ₁ B ₁	120	Total Males
Science	B ₂	A ₁ B ₁ C	40	40	40	A ₁ B ₂	120	240 A ₁ C
Total Experience			80	80	80			

A₂ Males

Arts	B ₁	A ₂ B ₁ C	40	40	40	A ₂ B ₁	120	Total Female
Science	B ₂	A ₂ B ₂ C	40	40	40	A ₂ B ₂	120	240 A ₂ C
Total Experience			80	80	80	A ₂ C	240	

Total Males and

160 160 160 480 Grand Total

In the above subgroup according to experience the number of teachers in each subgroup is 40. The sample is described diagrammatically with nomenclature of the group.

Table 3.2 : The Distribution of the Sample of Teachers of as given below :

Sex	Faculty	Experience	Number	Group Sample
Male	Arts	Upto 10 Years	40	$A_1B_1C_1$
Male	Arts	11 to 22 Years	40	$A_1B_1C_2$
Male	Arts	Over 20 Years	40	$A_1B_1C_3$
Male	Science	Upto 10 Years	40	$A_1B_2C_1$
Male	Science	11 to 20 Years	40	$A_1B_2C_2$
Male	Science	Over 20 Years	40	$A_1B_2C_3$
Female	Arts	Upto 10 Years	40	$A_2B_1C_1$
Female	Arts	11 to 20 Years	40	$A_2B_1C_2$
Female	Arts	Over 20 Years	40	$A_2B_1C_3$
Female	Science	Upto 10 Years	40	$A_2B_2C_1$
Female	Science	11 to 20 Years	40	$A_2B_2C_2$
Female	Science	Over 20 Years	40	$A_2B_2C_3$

TOTAL 480

Males- A_1	Arts- B_1	Experience Upto 10 Years	C_1
Females- A_1	Science- B_2	Experience 11-20 Years	C_2
		Experience 21 + Years	C_3

3.4 TOOLS :

The success or failure of a project depends on the efficiency of the tools utilised for collection of data when a standardised test is available it is logical to use it.

"A standardised test is one in which the procedure, apparatus and scoring have been fixed so that precisely the same test can be given at different times and places"².

Standardised tests were available for both teaching efficiency and teaching aptitude. These were used for collection of data.

(1) **Teaching Efficiency** : VTTP Verma's test for teaching proficiency constructed by Dr. M. Verma was used.

(2) **For Teaching Aptitude** : The T.A.T. (Teaching Aptitude Test) Constructed by Dr. Jai Prakash and Dr. R.P. Srivastava and prepared by Dr. S.D. Kapoor was used. The details of these tests are given below.

3.5 VERMA'S TEST FOR TEACHERS PROFICIENCY :

This test has been constructed and standardised by Dr. Mithilesh Verma, Head, P.G. Department of Research and psychology, A.N.D. M.M. Mahavidyalaya (Kanpur University) Kanpur published by Psychomeasures.

2. 'Essentials of Psychological' by Lee S. Crobach, Plarper Row, New York, P.22.

CONCEPTION OF THE TEST :

The prestige of any academic institution depends on the quality of its teachers. It is the devotion and sacrifice on the part of the teachers that they command unique respect in society. The dearth of suitable teachers is a handicap in proper teacher learning process. The teaching profession is expected to be highly promising for the talented young generation to inspire in them and to instil in them desirable attitudes.

It is obvious that a teacher should be a genuine teacher. The most basic action in this direction is that each teacher has to discover himself/herself, has to be assessed by every one involved in the teaching learning system. This can make the teacher's role more effective and useful.

In 1953 the committee on the criteria of teacher effectiveness of the American Educational Research Association observed :

"The simple fact of the matter is that after forty years of research on teacher's effectiveness during which a vast number of studies have been carried out. One can point to a few outlines that a superintendent of schools can safely employ in hiring a teacher or granting his tenure". (Ref. Remmer's et al. Second report of the committee on criteria of teacher effectiveness Journal of Educational Research, 46, 641-657, 1953).

PURPOSE :

VTTP is a sample as well as predictor. For novice in the training and the profession itself, the best works as predictor and for those who are already in the teaching profession it works as an assessor of the intentionally enhanced or developed characteristics needed for efectivity of the profession. Thus it also works as a criterion for in service promotions.

The VTTP is a ten to fifteen minutes objective test designed to provide a standard means of teaching proficiency or potentiality. The test is meant for the teachers of intermediate and higher classes. It consists of scales there are 25 items each scaled on 5 points and the typical performance has to be precisely marked on any point in each scale the author's own experience of more than 36 years helped in identifying exact characteristics that are necessary for effective performance in the teaching profession. The final format encouraged after due confirmation and verification of the criteria during the process of development and standardisation of the test.

VTTP AND ITS DEVELOPMENT :

Verma's test of teachers proficiency (VTTP) assesses fairly the living component of the teaching profession under 3 ruberics (sub sets).

1. Teacher's personal characteristics TPC

2. Teacher's Vocational characteristics TVC
3. Teacher's socio-political characteristics TSC

There can be enumerable characteristics under each heading, but the VTTP includes only the minimum number of pertinent ones sufficient enough to give an adequate indication of the present or predictive success in the profession of teaching.

The author did not try or thought it necessary to eliminate the factor of inter of intra correlations of the items and subsets.

3.6 TEACHING APTITUDE TEST :

This test has been constructed and standardised by Dr. Jai Prakash and Dr. R.P. Srivastava and prepared by Dr. S.D. Kapoor. It has been published by the Psycho-centre T-22 Green park New Delhi 1100126, India.

According to them the quality of a teacher in an educational system is a more important factor than all other educational factors put together. At present, in spite of the huge material accumulating in the field of psychological testing there is no standardised testing of aptitude test which should be helpful in the pretraining selection of teachers thus the consturction and standardisation of the above test.

Aptitude is not necessarily an entiry, but rather a constellation of entities the set of characteristics which enables

one person to learn something may even be different from that which enables another person to learn the something. Here in this test the term aptitude has been used in its narrower sense, i.e. in terms of individual differences and traits. The aptitude here has been considered here as relative and not identical with concepts of ability, capability, capacity, proficiency, skill talent and genius etc.

TEACHING APTITUDE :

Any one who is to become a teacher needs an intellect capable of grasping not only this subject matter and its place in the curriculum but also the aims and processes of education. Assuming that the candidate is bright, that he learns readily and assimilates thoroughly what he studies. The question still remains as to the likelihood that he can also teach others.

WHAT THIS TEST MEASURES :

This test is meant for measuring the aptitude towards teaching profession. The scale has 10 subtests and a total of 150 items. Each sub-set contains 15 items. There is no time limit for the test but generally the examinees complete within 30 minutes. The test has the following areas belonging to each of the 10 subtests.

1. COOPERATIVE ATTITUDE :

This trait has been used for measuring the cooperative attitudes of teachers towards their taught, society and the

nation. This trait is an essential link for the relationship between the teacher and taught, the school and the community and the society and the nation.

2. KINDLINESS :

The items under this area have been used with regard to the general and particular attention of the teacher which is to be devoted for full growth and development of the personality of the pupil and to remove the hurdles and handicaps in the way, of growth and development of the pupil.

3. PATIENCE :

The patience is an important attribute of teachers personality as the very often meets such a critical situation which needs patience and tolerance on his part.

4. WIDE INTEREST :

The teacher is not suppose to stick to his work of teaching the subjects only but he is also in active participant in cocurricular activities outside the institution. He wants to see his taught growing physically mentally, culturally, socially and in other aspects of life.

5. FAIRNESS :

This element has been taken in the test to measure the fairness and impartially of the teacher which are the most essential traits of the teachers personality.

6. MORAL CHARACTER :

Moral status in the opinion of adults specially concerning their adherence to the adult standard have been tried to be seen through the items constituting this area.

7. DISCIPLINE :

Discipline and problems of conduct in the classroom and else where, and the methods employed in dealing with the problems are contained in this area.

8. OPTIMISM :

This trait is more essential in the teachers personality as he is supposed to be always optimistic.

9. SCHOLARLY TASTE :

A teacher is always a student in the acquisition of knowledge. He is always thirsty for knowledge. He is always thirsty for knowledge and as such items in this subset measures scholarly taste.

10. EUTHUSIASM :

Enthusiasm is an important element for the personality of a good teacher the importance of this trait has increased too much in the present stage.

PROPERTIES OF THE TEST :

In the development of this test, the job psychographic method of is and Skinner was followed for the purpose of

collecting and analysing information on various aspects of teaching profession. This yielded a list of attitude and traits which are considered important in the teaching job. The traits mentioned by witty (1947), Bar (1948), Adaval (1952), Menon (1949) were also considered. Finally 20 common traits, which were essential for the successful teacher, were selected for the first experimental draft. After the final item analysis only 150 items, which were highly scored were taken for the final draft.

WEIGHTAGE TO ITEMS :

For every items the weights were determined by a variance and its covariance with other items. In this test, the wights of 3,2 and 1 were assigned to the right reponses of Ha 'A' and 'A' and 'I' or 'HD' 'D' and 'I' were given to the wrong responses of 'HA' 'A' and 'I' G 'HD' 'D' as I resp. After this a scring formula (Lindquist 1961) rights minus wrong $S=R-W$ was adopted to obtain the correct scores the coerricient of correation between the raw-scores of the test and the rated-scores was found to be 0.579 by product moment method and this jusrified the given weithtages to agrater extent.

STANDARDISATION SAMPLE :

The final test consisting of 150 ststements was given to a large sample of 1050 pupil teachers under training in eleven government teachers. Training Institurtions of Madhya

pradesh spread over in some eight districts. These teachers training institutions were divided into 3 grade above average and below average on the basis of their results in public and home examinations, and from each of these grades 336, 300, 414 teachers were drawn respectively. The raw scores indicated that we were dealing with a normally distributed population. The frequencies revealed the scores ranging from 51 (lowest) to 400 (highest) the highest frequency was 201 which belonged to the class interval of 201-250 scores nearly the middle step of the distribution. As a result the mean being 212 (with a standard deviation of 61.6) the median 213.6 and the mode 217. The SEM (1.9) was also very small. The skewness obtained was only (0.39) and the kurtosis being 0.053 which were all insignificant. Such a nice normal distribution induces us to expect that the norms of this test would be applicable to a wider universe of teachers and the test can safely be used to assess the teaching aptitudes of all sorts of teachers working in the junior and senior higher secondary schools, even the very superior and the defective ones.

VALIDITY :

A test is highly valid if it measures effectively the property it purpots to measure. The validity of the test was secured by computing coefficient of correlation between scores on a the test and the assessment marks obtained in the final examinations the coefficient of correlation between the total

marks of theory, practice teaching and craft, and the test score on 200 pupils teachers was. The obtained validity coefficient is quite satisfactory.

GROSS VALIDATION :

The General psychological readers want to know how well the result hold good in other situations. The last was administered to a group of 50 pupils teachers the results was compared with the ratings of principal and four lecturers of the same institution. The coefficient of correlation came to .672 which is higher than .579 of the earlier experiment of group and revealed that the final test is more developed and predictive than the earlier experimental draft.

RELIABILITY :

The reliability or the test was calculated by splithalf method using Guttman and Searman- Brown prophecy formulas which yielded the coefficient of correlations as .891 and .91 rest on a sample of 100 cases. The test-retest method on a group of 50 teachers yielded a correlation of .94. All these coefficients are high and therefore the test has a good reliability the test has also a higher degree of internal consistency and all the ten traits measures independently their respective qualities irrespective of a moderate overlapping among traits. The inter-element correlations between the 10 components mostly centre around .5 hardly any one of them is less than .5 and more than .547.

ADMINISTRATION OF THE TEST :

The test has a reasonable test Booklet of 8 pages containing ten parts (or sub-tests) and a two-pages Answer sheet for recording the answers. The answers to the first 75 items are to be recorded on p. 1 of the answer sheet i.e. parts 1 to 5, and on the back page 2 are parts 6 to 10 running from item 76 to 150.

Necessary instructions and examples are included.

SCORING THE TEST :

The T.A.T. is set up to permit the hand scoring of separate answer sheet. Separate transparent keys are available for scoring each page of the answer sheet and for right as well as wrong answer. In all there are 4 keys.

1. Right answers on page 1
2. Right answers on p.2
3. Wrong answers on p.1
4. Wrong answers on p.2 of the answer sheet.

Each of the 150 statements of the test has 5 alternative responses H.A., A, I., D, H.D.

As may be noted, the test has two sets of scoring keys. One for the Rights (R) and the other for wrong (W) score. Accordingly, the weights of 3,2,1 are given to the right responses of HA, A and I or HD, D and I respectively whichever

is correct as is visible through the blank circles of the Right keys similarly the weights of -3, -2 and -1 are assigned to the wrong answers of HA, A and I or HD, D & I whichever is visible throughout the blank circles of wrong. Thus the scoring gives two sets of scores is right and wrong scores the correct score is obtained by subtracting the wrong scores from the Right scores (R.W.) and this remainder is an individually raw score.

Norms Scores are given in the appendix 5 and 6.

3.7 COLLECTION OF DATA :

The data was to be collected from teachers so the responders had to be tackled individually. As already expressed the first step was the selection of colleges from the list of 110 Intermediate colleges of Kanpur 20 boys colleges and 25 girls colleges were selected from these, a sample of about 260 to 300 teachers was selected from whom the requisite 240 was secured satisfactorily. Permission to take the teachers as samples was first got from the Principals. Then the teachers were contacted their agreement and cooperation having been assured the forms were distributed to them. The tests were not a very big problem as one of them (VTTP) was small and compact to compensate for the length of the T.A.T. All the usual delays and setbacks of course were there, but with patience and perseverance the data was collected.

3.8 STATISTICAL TECHNIQUES :

After Scoring according to the instructions in the manuals the tables were made for the 12 groups showing the 4 areas of efficiency and aptitude. These were 12 tables.

The calculations were done by computer. The following statistics were estimated :

1. Mean, SD for all the groups.
2. 'F' score (by A NOVA) for difference within the groups. The results were assessed by the values of 'F' given below from 'F' table in Garrett :

$Df_1, 500 F_1, 500$ - at .05 level of significance = 3.86

$Df_2, 500 F_2, 500$ -at .05 level of significance = 3.01

3. 't' values where 'F' was significant.
4. Correlation between efficiency and aptitude in the different groups and subgroups.

The statistical formulae used were as follows :

(i) Arithmetic mean (AM.) = $\frac{\sum X}{N}$

Where

X= Value of variate,

N= Size of sample.

(ii) Standard deviation

$$S.D. = \sqrt{\frac{\sum (X-M)^2}{N-1}}$$

Where

SD = Standard deviation

X = Variate value

M = Mean of X

N = Size of sample.

(iii) Variance and 'F'

$$\text{Variance} = \frac{SS}{df}$$

$$'F' = \frac{V_M}{V_G}$$

Where

SS = Sum of Squares

df = degrees of freedom

V_m = Variance between means

V_G = variance between groups

$$(iv) \quad t = \frac{D}{SED}$$

Where

D = Difference between group means = $M_1 - M_2$

$$SED = \sqrt{EMS \left(\frac{1}{N} + \frac{1}{N_i} \right)}$$

EMS = Error mean square

M_1 = Mean of group 1

M_2 = Mean of group 2

N_1 = Size of group 1

N_2 = Size of group 2

(v) Correlation

$$r = \frac{\sum NX Y - \sum X \bar{x} \sum Y}{\sqrt{(N(X^2 - (\bar{x})^2)) (N(Y^2 - (\bar{y})^2))}}$$

Where

r = Coefficient of correlation

X, Y = Variate values

N = Size of sample

CHAPTER- IV

- 4.1 Introduction
- 4.2 Analysis of Data
- 4.3 Teaching Efficiency
- 4.4 Ist Area of Efficiency- Vocational Characteristics
- 4.5 IInd Area TPC of Efficiency
- 4.6 IIIrd Area of Efficiency TSC
- 4.7 Inter group Differences
- 4.8 Teaching Aptitude
- 4.9 Total Teaching Aptitude
- 4.10 First Area of TAT 'Cooperative Attitude'
- 4.11 Second area of TAT 'Kindliness'
- 4.12 Third Area of TAT 'patience'
- 4.13 Fourth Area of TAT 'Wide Interest'
- 4.14 Fifth Area of TAT 'Fairness'
- 4.15 Sixth Area of TAT 'Moral Character'
- 4.16 Seventh Area of TAT 'Discipline'
- 4.17 Eighth Area of TAT 'Optimism'
- 4.18 Nineth Area of TAt 'Scholarity Taste'
- 4.19 Tenth Area of TAT 'Scholarty Taste'
- 4.20 Correlation
- 4.21 Findings

CHAPTER- IV

4.1 INTRODUCTION :

Research work involves various steps beginning with the conception of the problem and ending with the conclusions. These conclusions are arrived at on the basis of analysis of data obtained after relevant statistical calculations have been made.

This research project is an attempt to study the teaching efficiency and teaching efficiency and teaching aptitude of higher secondary male and female teachers of intermediate colleges of Jhansi Mandal Jhansi. The teachers were selected according to sex, faculty (arts and science) and experience (upto 10years ,11 to 20 years and morethan 21 years). Thus forty teachers in each group came to a total sample of 480 teachers . the teachers were divided in to 12 group. Dr. jaiprakash and Dr. R.P. srivastava's test was used for estimating teaching aptitude in 10 areas. V T T P (verma's test for teaching proficiency) was used for measuring Teaching Efficiency in 4 areas (total efficiency,TVC, TPC and TSC). After necessary statistical calculation the results obtained were analysed to test hypotheses and draw out the conclusions there from.

4.2 ANALYSIS OF DATA:

The analysis is divided into 3 parts. The first part deals with efficiency and the difference in efficiency in the different

groups. The second part deals with the areas of aptitude -each area being studied separately. the third part is a study of the correlation between Teaching Efficiency and Teaching Aptitude.

PART-I

4.3 TEACHING EFFICIENCY :

In this area, the total efficiency and the three areas of efficiency- vocational characteristics, personal characteristics and social characteristics have been studied. The study of these areas can show us where the lacunae are, whether the efficiency is satisfactory and needs only nominal improvement or if the efficiency is not upto the mark and has to be investigated. Also the difference between the groups when divided according to sex or faculty or experience can tell us where exactly to try for improvement of efficiency. It would give an idea about where to start our endeavours for achieving better efficiency.

As has already been pointed out the means scores and variance were estimated and the results based on them.

Table 4.1 below gives the 'F' values for total efficiency scores of the sample as a whole and when it is divided into groups according to sex, faculty and experience.

Table 4.1 : Analysis of Variance of Total Efficiency :

Groups	df	SS	MSS	F
A	1	.5334	.5334	6.83**
B	1	789.5	789.5	1.01
C	2	2.5710	12985.5	16.64**
AB	1	1922175	19821.75	25.40**
AC	2	97550	4877.5	6.25**
BC	2	1462.5	731.25	6.937
ABC	2	47020	2351.0	3.012
Error	468	365205.25	785.35	
Total	479	433041.0	90465	

* Significant

** Very Significant

*** Very highly significant

This notification has been used throughout.

It is clear from this table that when the sample is divided according to faculty the difference in efficiency is not significant. Hypothesis No.2 is therefore accepted. When the difference in efficiency are taken in relation to sex and experience, they are significant, thus Hypotheses 1 and 3 rejected. It can concluded that the differences in efficiency are significant when the sample is dvided according to sex or experience.

Table 4.2 shows that the mean scores for the total efficiency of the sample is of average level, as a whole, when

TABLE 4.2 : Intergroup Differences of Mean Scores of Teaching Efficiency- Sexwise and Facultywise.

Mean Scores	B ₁	Level	B ₂	Level	Diff.	A Means	Level	C.D.
A1	225.706	A	216.187	A	19.519*	225.847	A	CD(A)=5.011
A2	216.187	A	231.604	A	15.417*	223.896	A	CD(B)=5.011
Diff.	19.519*		15.417*			2.051		CD (AB)=7.007
B Means	225.947		223.896		2.051	227.227		
N	2.40		240				A	

the sample is divided according to sex or faculty. The mean scores are higher for male teachers 225.947 than those for female teachers 223.896. The mean scores for Arts teachers is 225.947 which is higher than the mean score 223.896 for science teachers. The difference between Arts and science, male and female teachers is significant rejecting Hypotheses No. 1 and 2.

From table 4.3 it is evident that the efficiency mean score for the total sample of first experience period upto 10 years 235.929 higher than for the other groups. It is lowest for the 3rd experience group being 217.940. The mean score for first experience group is significantly higher than the mean score for the 2nd and 3rd experience groups. Rejected Hypotheses No.3.

When the sample is divided according to sex and faculty in the 3 experience groups, the difference of the mean scores of females differ significantly from the scores for males in the IInd and IIIrd experience groups. Female science and art teachers differ significantly in the mean scores for the IInd and IIIrd experience group. It is only in the 3rd experience group that male arts. It is only in the 3rd experience group that male arts and science teachers differ significantly. The mean scores for male arts teachers in the 3rd experience group do not differ significantly while the mean scores for male science teachers for the 3rd experience group differs from Ist

and IIInd experience group. The mean score for females of Ist experience group is 240.679 the highest and the lowest is 216.132 for male science teachers of IIIrd experience group. Efficiency of the newer teachers is better than those of the more experienced teachers which is to be expected.

4.4 IST AREA OF EFFICIENCY-VOCATIONAL CHARACTERISTICS:

In the Ist area T.V.S. of efficiency the 'F' values in Table (4.4) show the same picture as for the total efficiency. The difference when the sample is divided according to sex or experience is significant and the Hypotheses 1 and 3 are rejected. The differences when the division is on the basis of faculty being insignificant Hypothesis 2 is retained.

From the Table 4.5 it is evident that the mean scores for males art teachers is highest and female arts teachers lowest. The difference is significant rejecting hypothesis 1. The difference between male and female science teacher is not significant retaining Hypothesis 2. But the difference between the total group of male and female teachers and science and arts teachers is significant rejecting the hypotheses 1 and 2 these cases.

The mean scores of all the group are on the lower side of average. this means that there is a lot of scope for improvement in the area of vocational characteristics.

Table 4.6 shows that there is significant difference

TABLE 4.3 : Mean Scores for total Efficiency when sample is divided according to Experience,
Faculty and Sex.

Group	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	237.584	223.635	3.899	235.609	230.417	226.487	3.93	228.452	239.118	216.132	22.986 *	227.625
A ₂	231.818	240.679	8.861	236.248	218.326	236.042	15.716 *	227.184	198.419	218.092	19.673 *	208.255
Diff.	5.766	7.034		0.639	12.091 *	9.555 *		1.268	40.699 *	1.960		19.370
Mean	234.701	237.157	2.456	235.929	224.371	227.880	3.447	218.767	218.769	217.112	1.657	217.940
(AC) =	8.679		CD(BC) =	8.679			CD(ABC) = 12.274					

between the efficiency mean scores of this 1st area T.V.C. of the 3 experience groups 1st experience groups mean being the highest 89.633, IIInd experience group mean 84.91 and the IIIrd experience group mean 82.31, the lowest. so we can conclude that experience does not necessarily increase the efficiency in this area. The difference in the mean scores for male Arts is significant only of the 2nd experience group with 1st and 3rd experience groups. The 3rd experience group differs significantly from the 1st and 2nd groups. Among the female teachers each experience group differs significantly from the other experience groups both in art and science groups These results show that the newer science and arts teachers both male and female are better than the older group.

Table 4.4 : Analysis of Variance First Area of Efficiency TVC

Group	df	S.S.	SS _M	F	Significance
A	1	594.69	594.687	4.13	*
B	1	149.44	149.437	1.04	N.S.
C	2	4408.59	2204.297	15.33	***
AB	1	514.50	514.5	3.577	N.S.
AC	2	1666.62	833.31	5.79	**
BC	2	288.22	144.11	1.00	N.S.
ABC	2	697.44	348.72	2.42	N.S.
Error	468	67298.87	143.80		
Total	479	75618.375	157.87		

Table 4.5 : Inter Group Differences Mean Scores for Ist area of Efficiency (T.V.C.)

Group	B ₁	B ₂	Diff.	A Means	CD
A1	87.209	86.253	.956	86.731	(A) = 1.095
A2	82.912	86.098	3.186*	84.505	(B) = 1.095
Diff.	4.297*	.155		2.226*	(AB) = 1.548
B Means	85.06	86.176	1.116*	85.62	

4.5 IIND AREA T.P.C. OF EFFICIENCY :

From table 4.7 it is clear that when the sample is divided either sexwise or facultywise, the difference is not significant so hypotheses 1 and 2 retained. But experience groups are significantly different in this respect rejecting hypothesis 3. Both in this area TPC and in the Ist area T.V.C. the differences are significant when the sample is divided according to experience.

The table 4.8 shows that differences in the mean scores when the sample is divided facultywise and sexwise are significant rejecting the hypotheses 1 and 2. The female art teachers are significantly lower than female science teachers while male art teachers are significantly higher than male science teachers. This difference is in agreement with the results of the Ist area. The total there fore becomes not significant.

TABLE 4.6 : Mean Scores of Ist Area of Efficiency T.V.S. According to Experience Spans.

Ist Experience Group upto				IInd Experience Group 11 to				IIIRD Experience Group 21				
10 Years				20 Years								
Group	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
Means												
A ₁	88.474	89.46	.986	88.967	84.127	86.33	2.203	85.23	89.026	82.97	6.056	85.997
A ₂	89.947	90.65	.703	90.299	82.56	86.62	4.06	84.591	76.23	81	4.77	78.625
Diff.	1.473	1.19		1.332	1.567	.39		.739	12.796	1.97		7.372
Mean	89.21	90.05	.84	89.633	83.313	86.48	3.167	84.91	82.628	81.995	1.333	82.31
CD(C) = 2.635 CD(AC) = 3.726 CD(BC) = 3.726 CD(ABC) = 5.269												

The mean scores of the 2nd efficiency area T.P.C. (Table 4 when the sample is divided according to experience shows the same pattern as that for the 1st area T.V.C. of efficiency. The variations in groups of female teachers is much more than for the male teachers. The highest mean score is 92.786 of the female science teachers and the lowest mean score is 77.608 for female arts teachers. All the mean scores are on the lower side of average. The efficiency of the sample is not upto the mark and has to be improved.

Table 4.7: Analysis of Variance of IIInd Area T.P.C. of Efficiency Values.

Group	df	S.S.	SS _M	F	Significance
A	1	524.72	524.72	3.50	NS
B	1	88.031	88.03	0.59	NS
C	2	3959.22	1979.61	13.21	***
AB	1	2710.06	2710.06	18.08	***
AC	2	717.62	358.81	2.39	NS
BC	2	120.0	60.0	0.40	NS
ABC	2	472.81	236.406	1.577	NS
Error	468	70147.28	149.89		
Total	472	78739.75	164.38		

TABLE 4.8 : Mean Scores of Facultywise and Sexwise Distribution of IInd ARea TPC of Efficiency.

Group	B ₁	B ₂	Diff.	A Means	CD
Means					
A ₁	90.633	86.739	3.89 *	88.686	(A) = 2.196
A ₂	83.789	89.399	5.61 *	86.594	(B) = 2.196
Diff.	6.85 *	2.66 *	.858	1.092	(AB) = 3.106
B Mean	87.211	88.069		87.64	

4.6 IIIRD AREA OF EFFICIENCY OF T.S.C. :

From table 4.10 'F' values, it is clear that the significance of differences is like that of the total and Ist areas of efficiency the difference when the sample is divided facultywise the difference is nonsignificant retaining the hypothesis 2 while the differences when the sample is divided sexwise or experience wise is significant rejecting hypotheses 1 and 2.

4.7 INTER GROUP DIFFERENCES :

From the table 4.11 it is clear the means for this area are on the lower side. The mean score for male art teachers 57.865 is highest and lowest for female art teachers 49.468. As in the previous case the differences between male arts and science teachers are opposite to those of female science and arts teachers. So the net result of difference between arts and science teachers is not significant retaining hypothesis 2. while hypotheses 1 and 3 are rejected.

The table 4.12 gives the experience wise mean scores of the third area of T.S.C. of efficiency. The mean of the third experience group 51.632 differs significantly from the means 55.279 and 55.0 of the Ist and IInd experience groups respectively. The

TABLE 4.9 : Mean Scores of IInd Area of Efficiency T.V.S. (of the 12 Experience Grops)

Group	Ist Experience Group				IInd Experience Group				IIIrd Experience Group			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	91.933	89.574	2.359	90.574	89.57	87.687	1.883	88.628	90.396	82.95	7.446	86.675
A ₂	89.776	92.786	3.01	91.281	83.983	90.381	6.398	87.182	77.608	85.03	7.422	81.319
Diff.	2.157	3.212		.707	5.587	2.694		1.446	12.788	2.08		5.356
Mean	90.855	91.18	.325	91.01	86.776	89.034	2.258	87.905	84.002	83.993	.009	83.997

CD(A_C) = 3.804

CD(BC) = 3.804 CD (ABC) = 5.379

CD(C) = 2.690

Table 4.10 :

Group	df	S.S.	SS _M	'F'	Significance
A	1	662.14	662.14	8.36	***
B	1	41.95	41.95	0.53	N.S.
C	2	1319.69	659.84	8.33	***
AB	1	4362.72	4362.72	55.1	***
AC	2	118.45	594.22	7.5	***
BC	2	155.5	77.75	0.98	N.S.
ABC	2	430.187	215.09	2.72	N.S.
Error	468	37049.62	79.16		
Total	479	45210.266	94.38		

TABLE 4.11 : Intergroup Differences of Efficiency IIIrd Area T.S.C.

Group	B ₁	B ₂	Diff.	A Means	CD
Means					
A ₁	57.865	52.426	3.439	55.145	(A) 1.596
A ₂	49.486	56.107	6.621	52.797	(B) 1.596
Diff.	8.379 [*]	3.681		2.348 [*]	(AB) 2.257
B Mean	53.675	54.267	.592	53.971	

TABLE 4.12 : Mean Scores of Illrd Area of Efficiency T.S.C. of the 12 Experience Grops

Group Means	Ist Experience Group				IInd Experience Group				IIIrd Experience Group						
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean			
A ₁	57.177	54.60	2.577	55.889	56.72	52.47	4.25	54.595	59.697	50.208	9.489	54.952			
A ₂	52.094	57.242	5.14	54.668	51.784	59.037	7.253	55.411	44.581	52.041	7.46	48.311			
Diff.	7.083	2.642		1.221	4.936	6.567		.816	15.116	1.833		6.641			
Mean	54.636	55.92	1.284	55.279	54.25	55.75	1.5	55.0	52.132	51.124	4.992	51.632			
CD(C) = 1.955				CD(AC) = 2.764				CD(BC) = 2.764				CD(ABC) = 3.909			

variation of mean scores for each part of division of the sample is different. The efficiency of male Art teachers is higher for the 3rd experience group lower for the male science group in the 3rd experience group significantly. But in the case of female teachers the efficiency of the 3rd experience group is significantly lower in both arts and science teachers than Ist the 3rd experience group due to this difference the differences in the whole group is nonsignificant.

The study of the efficiency of the sample reveals that difference in it due to sex is significant. The difference due to faculty is of a different pattern for both males and females teachers. So the net resultant becomes non-significant. Female teachers of lesser experience have better efficiency. Thus all the hypotheses 1, 2, 3 are rejected.

PART- II

4.8 TEACHING APTITUDE :

The teaching aptitude test has 10 areas. The aptitude has been studied separately for the 10 years. The norms for levels of aptitude for each area was based on the following rating- low aptitude scores upto 22, average aptitude score from 22 to 30 and high aptitude score 30 and above. For the total aptitude the norms were low aptitude upto 220, average from 221 to 300 and high from 301 and above.

4.9 TOTAL TEACHING APTITUDE :

The Table 4.13 shows that when the group is divided according to faculty and experience they differ from each other significantly. So Hypothesis 2 and 3 are rejected. But when the sample is divided according to sex, they are at par. Hypothesis 1 is therefore accepted.

Table 4.13 : Analysis of Variance of Total Aptitude :

Source of Variation	df	SS	MSS	'F'
A	1	1323.25	1323.25	1.1768
B	1	27922.50	27922.50	24.83*
C	2	6967.00	3483.50	3.0979*
AB	1	5.25	5.25	0.0047
AC	2	11999.75	5999.87	5.3357*
BC	2	2891.75	1445.87	1.285
ABC	2	8044.50	4022.25	3.58*
Error	468	526252.50	1124.771	-
Total	479	585406.50	1222.143	-

Table 4.14 shows that the lowest mean score 210.642 is for the male arts teachers and the highest 229.219 is for the female science teachers. The female teachers have higher mean scores than male teachers in all the groups. The teachers are significantly superior to arts teachers in all the groups. So

hypothesis 1 and 2 are rejected in all these cases. The hypothesis 1 is retained when the distribution of the whole sample and arts teachers is done according to sex.

Table 4.14 : Mean Scores of T.A.T.- Sexwise and facultywise Distribution :

Group	B ₁	B ₂	Diff.	A Mean
Means				
A1	210.642	225.692	15.05*	218.167
A2	213.758	229.217	15.46*	221.487
Diff.	3.116	4.525*		3.320
B Means	212.200	227.457	15.254*	219.827
CD(A) = 3.061		CD(B) = 3.061	FD(AB) = 4.329	

Table 4.15 shows that the aptitude for science teachers is higher significantly than the mean scores of arts teachers except in the 1st experience group of male teachers, 2nd experience group of female teachers and total science and total males of the 2nd experience group. In these three cases the hypothesis 1,2 and 3 are retained. In all the other cases the hypothesis 1,2 and 3 are rejected. This Supports our assumption that two decades back the selection of the teaching profession was very electric one. Also Science education was only taken up by the really good students. In any case, even now, students are allowed to take up the study of science at the Class IX

TABLE 4.15 : Mean Scores for total T.A.T. According to Experience

Group	Ist Experience Group				IInd Experience Group				IIIrd Experience Group			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	204.7	214.25	9.55	209.47	209.825	226.35	16.52*	218.087	214.4	236.475	22.1*	225.438
A ₂	210.6	243.125	32.67*	226.86	213.45	215.125	1.675	214.287	217.225	229.225	12.02*	223.237
Diff.	5.9	32.525		17.39*	3.625	11.25*		3.8	2.85	7.225		2.201
Mean	207.65	228.69	21.04*	218.17	211.637	220.737	9.1	216.187	215.817	232.36	17.55*	224.39

CD (C) = 7.367

CD(AC) = 10.419

CD (BC) = 10.419

CD(ABC) =

level only after testing . Thus better aptitude for science learning can be expected. Science students, if academically superior, generally go in for other services besides teaching. Those who come into the teaching profession must have had a strong inclination for it. The levels of aptitude are lower for the is experience group which means that inclusion of aptitude test for B.Ed. entrance is justified.

4.10 FIRST AREA OF T.A.T. 'COOPERATIVE ATTITUDE' :

The table 4.16 shows that the variations in the groups are significant in all the three cases when the sample is divided according to sex, faculty or experience. Hypothesis 1,2 and 3 are rejected for this first area of cooperative attitude of T.A.T.

Table 4.16 : Analysis of Variance of first Area of T.A.T.

Cooperative Attitude :

Source	df	S.S.	M.S.S.	F	D Group
A	1	172.801	172.801	8.6519	*
B	1	252.301	252.301	12.63	*
C	2	153.52	76.76	3.84	*
AB	1	16.87	16.87	0.845	NS
AC	2	239.549	119.774	5.99	*
BC	2	158.550	79.27	3.97	*
ABC	2	210.20	105.10	5.26	*
Error	468	9347.2	19.97		
Total	479	10550.99	22.02		

Table 4.17 shows that female science teachers have the best cooperative attitude having mean score of 23.092, which is on the lower side of high. male arts teachers have the lowest score of 20.442. The differences between male and female arts teachers and male arts and science teachers is non-significant retaining hypothesis 1 and 2 in these cases. In all the other cases the differences are significant, rejecting hypothesis 1 and 2 in these cases. This supports the theory that females can be expected to have better emotional rapport with students.

Table 4.17 : Sexwise and Facultywise Intergroup Differences of Mean Scores of First Area of T.A.T. Cooperative Attitude.

Group	B ₁	B ₂	Diff.	A Means	CD
Means					
A1	20.442	21.517	1.075	20.979	(A) = 0.802
A2	21.267	23.092	1.825*	22.179	(B) = 0.802
Diff.	.825	1.575*		1.2*	(AB) = 1.134
Means	20.854	22.304	1.450*	21.579	

Table 4.18 shows that the mean score 25.2 for female science teachers is the highest and 19.1 for male teachers lowest, both of the first experience group. Except for female science teachers the other three groups have a higher mean score in the third experience group as compared to the first

experience group. The differences between the male arts and science teachers are not significant in all three experience groups, retaining hypothesis 2 in this case. The differences between female arts and science teachers and all arts and science teachers are significant in the first experience group, rejecting hypothesis 2 in this case. Difference between mean scores of female and male science teachers in the first experience group are significant, rejecting hypothesis 1 in this case.

In the total assessment the results are not significant because of the difference in the pattern of aptitude in this area between males and females. The mean scores are not high, which means that improvement or better quality is needed in this area.

4.11 SECOND AREA OF T.A.T. 'KINDLINESS' :

From the Table 4.19, it is clear that the differences in the groups sexwise and experiencewise are at par. The significant difference is among facultywise division of groups. The groups sexwise and facultywise are also at par. The differences are significant when taken according to experience and sex and non-significant facultywise. Hypothesis 1 and 3 are rejected, hypothesis 2 is retained.

TABLE 4.18 : Mean Scores of the First Area Cooperative Attitude of T.A.T. in the Different Experience Groups.

Group	Ist Experience Group				IInd Experience Group				IIIrd Experience Group			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
Means												
A ₁	19.1	19.95	0.85	19.525	20.725	21.825	1.1	21.275	21.5	22.775	1.275	22.138
A ₂	20.15	25.2	5.05*	22.70	20.60	21.85	1.25	21.225	23.05	22.175	0.885	22.612
Diff.	.105	5.25*		3.175*	.125	0.25		.05	1.55	0.6		0.474
Mean	19.625	22.6	2.975*	21.112	20.662	21.838	1.176	21.25	22.275	22.475	.2	22.37

CD (C) = 0.982

CA(AC) = 1.389

C(BC) = 1.309

CD(ABC) = 1.962

Table 4.19 : Analysis of Variance- Second Area of T.A.T.

Source	DF	SS	MSS	'F'
A	1	0.76	0.76	0.0038 (NS)
B	1	371.01	371.01	18.504
C	2	129.705	64.05	3.23
AB	2	6.531	6.531	6.53258 (NS)
AC	2	256.53	128.27	6.397
BC	2	12.18	6.089	6.3037 NS
ABC	2	155.18	77.59	3.87
Error	468	9383.15	20.05	
Total	479	1034.37	21.53	

Table 4.20 shows that the mean scores for females 22.154, 21.39 and 23.126 are all higher than the corresponding mean scores for males 22.129, 21.133 and 22.92. The differences are significant only between arts and science teachers in all the groups rejecting hypothesis 2. The mean scores are at par when the division is according to sex, retaining hypothesis 1. It can therefore be concluded that science teachers are more sympathetic or cooperative with their students.

Table 4.20 : Mean Scores of Sexwise and Facultywise Groups for Second Area of T.A.T.- Kindliness.

Group	B ₁	B ₂	Diff.	A Means	FD
Means					
A ₁	21.133	22.92	1.789*	22.129	(A) = -.40
A ₂	21.39	33.125	1.735*	22.154	(B) = -.40
Diff.	.257	0.205		.025	(AB) = .578
Means	21.263	23.021	1.758*	22.142	

Table 4.21 shows the same characteristics as in Table 4.20. The significant differences are in the distribution groups. Except for males arts and science in the first and second experience groups and female art science teachers in the second experience groups, in which mean scores are not significantly different, retaining the hypotheses 1, 2 and 3 in these cases. In the other cases these hypothesis are rejected. The differences due to experience is not significant.

The aptitude in this second area also shows the same pattern as in the first area. The third experience groups are superior to the first experience groups in the male teachers, while the female teachers of the first experience groups are more superior. But the scores are not very high, mostly they are average.

TABLE 4.21 : Mean Scores of Second Area of T.A.T. Kindliness in Relation to Experience.

Group Means	Ist Experience Group				IInd Experience Group				IIIrd Experience Group			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	20.775	21.125	.35	20.95	19.85	23.65	3.8*	21.75	22.775	24	1.25	23.688
A ₂	21.725	24	2.275*	22.862	21.425	21.7	.275	21.56	21.025	22.037	2.025*	22.037
Diff.	.95	2.875*		1.912*	1.57	1.57		.19	1.75*	.95		1.651
Mean	21.25	22.563	1.313	21.906	20.638	22.675	1.957*	21.656	21.9	22.80	1.925	22.862

CD (C) = 1.391

CD(BC) = 1.391

C(ABC) = 1.967

4.12 THIRD AREA OF T.A.T. 'PATIENCE' :

The third area of teaching aptitude deals with the quality of patience. Table 4.22 shows that when the sample is divided into groups on the basis of sex and faculty they are at par. But when they are grouped according to experience, they differ significantly. So hypothesis 1 and 2 are retained and hypothesis 3 is rejected.

Table 4.22 : Analysis of Variance of Third Area of T.A.

Group	B ₁	B ₂	Diff.	A Means	FD
Means					
A	1	27.55	27.55	0.617	NS
B	1	63.86	63.80	1.43	NS
C	2	752.754	376.377	8.43*	
AB	1	438.92	438.92	9.84*	
AC	2	86.504	43.25	0.9692	NS
BC	2	11.58	5.79	0.1297	NS
ABC	2	165.01	82.51	1.8489	NS
Error	468	20884.52	44.62		
Total	479	22430.640	46.828		

Table 4.23 shows that the mean scores are low for all the groups. The highest and lowest mean scores 18.11 and 15.467 are respectively of male science and arts teachers. In this area of patience female arts teachers are significantly better than female science teachers, but male science teachers are

significantly better than male arts teachers. The hypothesis 1 is rejected in these two cases. Because of this difference the mean scores of total arts and science teachers are at par. Also mean scores of total male and female teachers are at par.

Table 4.23 : Mean scores of sexwise and Facultywise groups of third area of T.A.T. Paitece.

Group	B ₁	B ₂	Diff.	A Means	FD
Means					
A ₁	15.467	18.11	2.64*	16.787	(A) = .61
A ₂	17.858	16.675	1.183*	17.267	(B) = .61
Diff.	2.391*	1.433*		0.48	(B) = .862
B Means	16.662	17.392	7.32	17.027	

Table 4.24 shows that the lowest mean scores of 14.625 and 18.825 are respectively those of male arts teachers and male science teachers. The highest mean scores are 19.825 and 19.4 for female arts teachers of third experience group and male. Science teachers of Second experience group. The difference are significant only in the second and third experience groups between arts and science teachers and males and females in third experience groups. The hypotheses 1, 2 and 3 are rejected in these cases. It can be concluded that both sex and faculty have relationship with the quality of patience extended to the pupils in the different groups when divided

TABLE 4.24 : Mean Scores according to Experience for Third Area of T.A.T. patience

Means Group	Ist Experience Group				IInd Experience Group				IIIrd Experience Group			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	14.625	16.2	1.575	15.412	15.675	19.4	3.725	17.537	16.1	18.725	2.625	17
A ₂	14.825	15.575	.75	15.2	18.925	16.1	2.825	17.512	19.825	18.35	1.475	19
Diff.	.2	.625		.212	3.25	3.3		0.15	3.725	3.75		1
Mean	14.725	15.887	1.62	15.306	17.3	17.75	.45	17.524	17.962	18.537	.575	18

$$CD = (C) =$$

$$CD(AC) =$$

$$C(BC) =$$

$$CD(ABC) = 2.935$$

Table 4.25 : Analysis of Variance fourth wide Interest on T.A.T.

Source	DF	S.S.	M.S.S.	'F'	
A	1	1.408	1.41	0.297	NS
B	1	957.676	957.68	20.22*	
C	2	300.28	150.139	3.17*	
AB	2	4.80	4.80	0.10	(NS)
AC	2	367.68	183.84	3.88*	
BC	2	95.86	47.93	1.012	NS
ABC	2	2.11	1.055	0.022	NS
Error	462	168.05	47.367		
Total	479	23897.867	49.89		

Table 4.26 : Sexwise and Facultywise Mean Scores for the fourth Area of T.A.T. Wide Interest.

Group Means	B ₁	B ₂	Diff.	Means	CD
A ₁	21.308	21.933	.625	22.621	(A) = .628
A ₂	21.00	24.025	3.025	22.513	(B) = .628
Diff.	.308	2.092*		1.108*	
Means	21.513	23.979	2.426*	22.567	(AB) =

according to experience. The older generation are more understanding. The level of the mean scores, however, for the whole sample is low.

4.13 FOURTH AREA OF T.A.T. 'WIDE INTEREST' :

This area deals with the quality of interest in the teachers. Wide interest are basis for general knowledge and awareness of the world around them. The teacher has to teach the pupils to fit into their environment.

Table 4.25 shows that when the sample is divided into groups on the basis of faculty and experience the mean scores differ significantly for this area of wide interest. So the hypotheses 2 and 3 are rejected. Sexwise they are at par, retaining hypothesis 1 in this case.

Table 4.26 shows that the highest mean score 24.025 is for female science teachers while the lowest mean score 21.00 is for female arts teachers. The mean scores for total arts and science teachers, male and female teachers total and science faculty differ significantly in their men scores, rejecting hypothesis 1 and 2 in these cases. In the other cases the hypothesis is retained. The women exhibit better wide interest than men.

Table 4.27 shows that first experience group of teachers have a better mean score 23.668 than those of the other two experience groups 21.346 and 22.181. The mean

for both male and female science teachers. of the first experience group are at par with the corresponding means of the third experience group teachers. Also the male and female science teachers do not differ significantly in any of the experience groups. The hypotheses 1.2 and 3 are retained in these cases. The difference between the mean scores are significant for the first and third experience groups, rejecting hypotheses 1 and 3 in these cases. The mean scores for the different groups in this area of wide interest of aptitude are better than those of the previous three areas co-operative attitude, kindness and patience analysed before.

4.14 FIFTH AREA OF T.A.T. 'FAIRNESS' :

This area is related to the ability in the teacher to deal with fairness with the pupils.

Table 4.28 shows that only significant difference is when the sample is divided according to faculty. So the hypothesis 2 is rejected. When the sample is divided according to sex or experience the groups are at par. Thus retaining the hypotheses 1 and 3.

TABLE 4.27 : Mean Scores of Experiencewise Distribution of fourth Area of T.A.T. wide interest.

Means Group	Ist Experience Group				IInd Experience Group				IIIrd Experience Group			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	20.825	24.15	3.32*	22.481	21.95	23.22	1.32	22.58	21.15	24.425	3.275*	22.7
A ₂	22.9	26.8	3.9*	24.85	20.175	22.05	1.975	21.112	19.925	23.225	3.3*	21.5
Diff.	2.075	2.65		2.63	1.775	1.17		0.968	1.225	1.2		1.2
Mean	21.862	25.47	3.608*	23.668	21.062	22.63	1.57	21.346	20.538	23.825	3.287*	22.1

CD (ABC) = 3.024

CD(AC) =

CD(BC) =

CD(C) =

Table 4.28 : Analysis of Variance Fifth Area of T.A.T. Fairness:

Source variation	df	S.S.	M.S.S.	'F'	
A	1	0.35	0.351	0.0077	NS
B	1	742.515	742.51	16.2291	Sig
C	2	226.11	113.06	2.4711	NS
AB	1	14.355	14.36	0.3138	NS
AC	2	558.218	289.11	0.319	NS
BC	2	172.855	89.43	1.9546	NS
ABC	2	229.06	114.531	2.50	NS
Error	468	21412.823	45.75		
Total	479	23381.496	48.81		

INTERGROUP DIFFERENCES

From table 4.29 it is clear that the highest mean score 25.142 is for female science teachers and the lowest also is for female arts teachers. The differences are significant only between arts and science groups, rejecting hypothesis 2. The hypothesis 1 is retained because the differences between male and female teachers are non significant.

Table 4.29 : Intergroup Differences of Mean Scores of Fifth Area of T.A.T. Fairness :

Group Means	B ₁	B ₂	Diff.	Means
A ₁	22.708	24.85	2.142*	23.779
A ₂	22.30	25.142	2.384	23.725
Diff.	.4	.292		.054
Means	22.508	24.996	2.488*	23.702
CD(A) = 1.213 CD(B) = 1.213 CD(B) = 1.716.				

From Table 4.30 it is clear that the means of all the groups are better than for the other three previous area studied. The mean scores for the sample is highest 24.63 in the first experience group and mean score for the third experience group 23.666 is at par with the first experience group score. Both these differ significantly from the mean for the second experience group. Hypothesis 3 is rejected. The mean score for females is higher than the mean score for males in the first experience group and second experience arts group of teachers. In All the others the means for female teachers is less. These mean scores show the same tendency as in the experience group of other areas that the aptitude of females in the newer experience group is better than for the older group while for males, it is at par.

4.14 SIXTH AREA OF T.A.T. 'MORAL CHARACTER' :

In this area the attitude towards morality has been assessed. The teacher is not only responsible for the academic achievement of the pupils but he indirectly or directly imparts some of the moral values to the pupils.

Examination of Table 4.31 shows that the differences are significant only when the sample is divided according to faculty or experience. The hypothesis 2 and 3 are rejected. They are at par when the groups are divided according to sex. Hypothesis 1 is retained.

TABLE 4.30 : Experiencewise Group Mean Scores for Fifth Area of T.A.T. Fiarness.

Experience and Group Means	Experience 1				Experience 2				Experience 3			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	22.4	23.875	1.475	23.138	22.53	24.425	1.895	23.477	23.2	26.25	3 *	24.72
A ₂	23.175	29.075	5.9*	26.125	22.575	22.3	.275	22.437	21.175	24.05	1.125	22.61
Diff.	.775	5.2*		2.987	.045	2.125*		1.04	2.025	3.95*		2.10
Mean	22.787	26.475	3.68*	24.63	22.552	23.362	.81	22.957	22.187	25.15	29.63*	23.66

Table 4.31 : Analysis of Variance Sixth of T.A.T. Moral Character.

Source	df	S.S.	M.S.S.	'F'	
A	1	17.26	17.26	0.596	NS
B	1	632.50	632.50	21.87	NS
C	1	248.453	124.226	4.296	*
AB	1	113.10	113.10	3.91	*
AC	3	187.43	93.71	3.24	NS
BC	3	1.955	0.98	0.338	NS
ABC	2	26.98	13.49	0.466	NS
Error	468	13531.27	28.913		
Total	479	14758.947	30.81		

The mean scores shown in Table 4.32 reveal that the highest mean 24.5 and the lowest mean 21.233 are for female science and arts teachers. The mean scores for females is significantly higher for the science teachers in all the groups. The differences between males and females are significant only among science teachers, rejecting hypothesis 1 and 2 for the above groups Hypothesis 1 is retained when the sample is divided according to sex.

Table 4.32 : Mean scores of 6th Area Moral Character of T.A.T. Facultywise and Sexwise.

Group	B ₁	B ₂	Diff.	Means	FS
Means					
A ₁	21.825	23.15	1.325*	22.487	(A) = .965
A ₂	21.233	24.5	3.267*	22.867	(B) = .965
Diff.	.592	1.35*		.4	(AB) = 1.30
Means	21.529	23.825	2.256*	22.662	

TABLE 4.33 : Mean Scores of 6th Area Moral Character T.A.T. Experiencewise.

Experience and Group Means	Experience 1			Experience 2			Experience 3		
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	
A ₁	20.8	21.825	1.025	21.312	21.5	22.55	1.05	22.025	23.175
A ₂	21.425	25.35	3.925*	23.387	20.325	23.65	3.325*	21.987	21.95
Diff.	.625	3.525*		2.075	1.75	1.1		.038	1.225
Mean	21.112	23.587	2.575*	24.349	20.412	23.1	2.688*	22.001	22.612
									24.78
									21.68
									22.696

CD (C) =

CD(AC) =

CD(BC) =

CD(ABC) =

Table 4.33 shows that the highest mean score 25.35 is for female science teachers of the first experience group and lowest for female arts teachers of the second experience groups. The difference between arts and science female teachers is significant in all three experience groups, while they are at par for the male teachers, rejecting hypothesis 2 and 3 for female teachers and retaining them for male teachers. The difference between males and females is significant only in the first experience group of science teachers.

4.16 SEVENTH AREA OF T.A.T. 'DISCIPLINE'

Table 4.34 : 7th Area Discipline of T.A.T. Analysis of Variance

Source of Variance	df	S.S.	M.S.S.	'F'	
A	1	16.13	16.13	0.061	NS
B	1	7.01	70.01	0.29	NS
C	2	33.336	16.07	0.68	NS
AB	1	0.0078	0.0078	0.0003	NS
AC	2	226.65	113.33	4.65*	
BC	2	172.58	86.29	3.54*	
ABC	2	28.43	14.21	0.58	NS
Error	468	11413.05	24.38		
Total	479	11897.199	24.84		

Table 4.34 shows that the differences due to sex, faculty or experience are non-significant retaining hypotheses 1,2 and 3. The differences are in the subgroups of aptitude

when the sample is divided according to sex, faculty and experience. In these groups hypothesis 1,2 and 3 are rejected.

Table 4.35 confirms the above inference that as regards discipline there is no difference due to sex or faculty. This is logical as discipline is the part of class control which is essential whatever subject or class is considered.

Table 4.35 : Mean scores of 7th Area Discipline T.A.T. Sexwise and Facultywise.

Group	B ₁	B ₂	Diff.	Means	CD
Means					
A ₁	21.592	21.842	0.25	21.717	(A) = .886
A ₂	21.967	22.2	0.233	22.083	(B) = .886
Diff.	.375	.358		.366	(AB) = 1.253
Means	21.779	22.021	.25	21.9	

Table 4.36 shows that the variations are only in the first experience group. The highest mean score 23.675 is to female science teachers of first experience group and lowest mean score 20.25 and 20.2 are of male arts teachers of second experience group. The set result of nonsignificance in the effect of experience is the difference in the pattern for this aptitude in males and female teachers.

4.17 EIGHTH AREAS OF T.A.T. 'OPTIMISM' :

In this eight area optimism of T.A.T. the differences are non-significant sexwise, facultywise and experiencewise. All the

TABLE 4.36 : Mean Scores of 7th Area Discipline T.A.T. Experiencewise.

Experience and Group Means	Experience 1			Experience 2			Experience 3					
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	20.25	20.9	.65	20.57	22.85	21.95	.9	22.35	21.675	22.675	1.0	22.175
A ₂	21.15	23.675	1.925	22.712	22.175	20.2	1.975	21.187	21.975	22.725	.75	22.35
Diff.	1.5	2.275		2.142	.67	1.75		1.163	.3	.05		1.75
Mean	21.0	22.288	1.288	21.614	22.614	22.512	21.015	1.49	21.764	21.825	0.75	22.262

CD (C) = 1.214

CD(AC) = 1.717

CD(BC) = 1.717

CD(ABC) = 2.428

three hypothesis 1,2 and 3 are retained. Optimism is the approach to the profession which should be the same for all teachers.

In accordance with the Table 4.37 the differences between the mean scores on facultywise, sexwise distribution is non-significant as seen in Table 4.38, retaining the hypotheses 1,2 and 3.

Table 4.37 : 8th Area Optimism of T.A.T. Analysis of Variance.

Source of Variance	df	S.S.	M.S.S.	'F'	
A	1	36.85	36.85	1.21	NS
B	1	3.85	3.85	0.1261	NS
C	2	79.68	39.84	1.30	NS
AB	1	15.77	15.77	0.5163	NS
AC	2	25.88	12.94	0.424	NS
BC	2	14.58	7.29	0.2387	NS
ABC	2	55.66	27.83	0.911	NS
Error	468	14293.426	30.54		
Total	479	14525.697	30.32		

Table 4.38 : Mean scores of 8th Area Optimism of T.A.T.

Sexwise and Facultywise.

Group Means	B ₁	B ₂	Diff.	Means	CD
A ₁	21.942	21.4	.542	21.671	(A) = .991
A ₂	22.133	22.317	.184	22.225	(B) = .991
Diff.	.191	.917		.554	(AB) = 1.482
Means	22.637	21.858	.179	21.949	

TABLE 4.39 : Mean Scores of 8th Area Optimism T.A.T. Experiencewise.

Experience and Group Means	Experience 1			Experience 2			Experience 3		
	B ₁	B ₂	Diff.	B ₁	B ₂	Diff.	B ₁	B ₂	Diff.
A ₁	22.5	21.525	.975	22.012	21.425	.587	21.85	21.825	.025
A ₂	21.225	22.875	.165	21.95	21.425	.525	23.225	22.75	.525
Diff.	1.275	.425		.038	.525	.55	1.375		
Mean	21.862	22.2	.338	22.031	21.687	21.412	22.537	22.263	.274
					21.137	.55			22.4

CD (C) = 1.214

CD(AC) = 1.717

CD(BC) = 1.717

CD(ABC) = 2.428

Table 4.39 shows that the intergroup differences of the mean scores experiencewise are not significant in all the divisions- sexwise, facultywise and experiencewise.

4.18 NINTH AREA OF T.A.T. 'SCHOLARY TASTE' :

In the ninth area Scholarly Taste of T.A.T. the table 4.40 shows that in the sexwise division the groups are at par retaining hypothesis 1. The differences facultywise and experiencewise are significant rejecting hypothesis 2 and 3. The 'F' ratio for the subgroups is not significant. Both sexes must have scholarly taste or else they can not teach their subjects adequately. This criterion is the same for all teachers.

Table 4.40 : 9th Area Scholarly Taste of T.A.T. Analysis of Variance

Source	DF	S.S.	M.S.S.	'F'	
of					
Variance					
A	1	1.00781	1.00781	0.0492	NS
B	1	448.533320	448.53320	19.6669*	
C	2	121.12891	60.56415	4.6556*	
AB	1	1.63281	1.63281	0.0716	NS
AC	2	137.75391	68.87695	3.0201	NS
BC	2	29.77930	14.88965	0.6549	NS
ABC	2	137.50586	68.75293	3.0106	NS
Error	468	10673.44900	22.80652		
Total	479	11550.79100	24.14390		

Table 4.41 : Mean Scores of 9th Area Scholarly Taste of T.A.T.
Facultywise and Sexwise.

Group	B ₁	B ₂	Diff.	Means	CD
Means					
A ₁	21.2	23.25	2.05*	22.225	(A) = .85
A ₂	21.408	23.225	1.817*	22.317*	(B) = .85
Diff.	.208	.025		.92	(AB) = 1.21
Means	21.304	23.237	1.933*	22.271	

TABLE 4.42 : Mean Scores of 9th Area Scholarly Taste of T.A.T. Experiencewise.

Experience and Group Means	Experience 1				Experience 2				Experience 3			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	20.125	21.5	1.375	20.812	21.25	24.025	2.775*	22.638	22.225	24.225	2.0	23.22
A ₂	20.6	24.225	3.625*	22.412	22.20	22.00	0.2	22.1	21.425	23.4	1.97	22.41
Diff.	.475	2.725*		1.600	.95	2.025		.538	.8	.825		.81
Mean	20.363	22.867	2.499*	22.612	21.72	23.012	1.292	22.366	21.825	23.812	.987	22.86

CD (C) = 1.049

CD(AC) = 1.484

CD(BC) = 1.484

CD(ABC) = 2.098

Table 4.43 : 10th Area Enthusiam of T.A.T. Analysis of Variance.

Source of Variance	DF	S.S.	M.S.S.	'F'	
A	1	18.0193	18.01963	0.5099	NS
B	1	351.91797	351.91797	9.9574*	
C	2	117.71275	58.85	1.6654	NS
AB	1	5.85156	5.85156	0.1656	NS
AC	2	75.94922	37.97461	1.0745	
BC	2	1.39844	0.69922	0.0198	NS
ABC	2	165.31641	82.658	2.3308	NS
Error	468	16540.2270	35.34		
Total	479	17226.59800	36.06764		

Table 4.44 : Mean Scores of Enthusiam of T.A.T. Sexwise and Facultywise.

Group	B ₁	B ₂	Diff.	Means	CD
Means					
A ₁	23.025	24.517	1.492	23.771	(A)=1.066
A ₂	23.192	25.125	1.933*	24.158	(B)= 1.066
Diff.	.167	.608		.389	(AB)= 1.508
Means	23.108	24.821	1.713	23.95	

From the mean scores Table 4.41 the differences sexwise are non-significant. The differences facultywise are significant supporting the retention of hypothesis 1 and rejection of hypothesis 2.

Table 4.42 shows that the mean scores differences experiencewise are non-significant. The reason is that for the males and female teachers, the generation difference is non-significant because the variation patterns are different. The significant differences are in the first experience group as in the other areas. The female teachers have better aptitude than males teachers only in the first experience group.

4.19 TENTH AREA OF T.A.T. 'ENTHUSIASM' :

This area enthusiasm is a quality which should be similar for all the teachers. The Table 4.43 shows that sexwise the differences are at par. The differences in regard to experience are also non-significant, retaining hypothesis 1 and

TABLE 4.45 : Mean Scores of 10th Area Enthusiasm of T.A.T. Experiencewise.

Experience and Group Means	Experience 1				Experience 2				Experience 3			
	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean	B ₁	B ₂	Diff.	Mean
A ₁	23.25	23.2	.05	23.225	22.075	24.45	2.375	23.263	23.75	25.9	2.15	24.83
A ₂	22.825	26.5	3.68*	24.662	23.1	23.85	.75	23.48	23.65	25.05	1.973	24.33
Diff.	.43	3.3*		1.437	1.025	.6		.217	.1	.875		.49
Mean	23.012	24.85	1.838	23.931	22.588	24.15	1.562	23.37	23.7	25.462	1.762	24.58

CD (C) = 1.306

CD(AC) = 1.847

CD(BC) = 1.847

CD(ABC) = 2.612

TABLE 4.46 : Correlation between Teaching Efficiency and Teaching Aptitude of the sample, sexwise, Facultywise and Experiencewise.

Experience Group	C1		C2		C3		OVERALL	
	N	r	N	r	N	r	N	r
Sexwise and Facultywise Groups								
A1B1	40	0.168	40	0.235	40	0.523*	120	0.313*
A1B1	40	0.042*	40	0.04	40	0.239	120	0.001
A1	80	0.30*	80	0.30*	80	0.39*	240	0.132*
B1	80	0.297*	80	0.262	80	0.365*	240	0.21*
A2B1	40	0.415*	40	0.173	40	0.190	120	0.100
A2B2	40	0.301	40	0.329*	40	0.684*	120	0.400*
A2	80	0.402*	80	0.19	80	0.49*	240	0.21*

TABLE 4.47 : Significance of Hypothesis

Efficiency										Aptitude					
Groups	TE	TVC	TPC	TSC	TAT	1	2	3	4	5	6	7	8	9	10
A	Sig	Sig	NS	Sig	NS	Sig	NS	NS	NS	NS	NS	NS	NS	NS	NS
B	NS	NS	NS	NS	Sig	Sig	Sig	NS	Sig	Sig	Sig	NS	NS	Sig	NS
C	Sig	Sig	Sig	Sig	NS	Sig	Sig	Sig	NS	NS	Sig	NS	NS	Sig	NS
AB	Sig	NS	Sig	Sig	NS	NS	NS	Sig	NS	NS	Sig	NS	NS	NS	NS
AC	Sig	Sig	NS	Sig	Sig	Sig	Sig	NS	Sig	Sig	NS	S	NS	NS	NS
BC	NS	NS	NS	NS	NS	Sig	NS	S	NS	NS	Sig	S	NS	NS	NS
ABC	Sig	NS	NS	NS	Sig	Sig	Sig	NS	N	NS	Sig	NS	NS	NS	NS
															Sig

3. The differences are significant only in the facultywise division-rejecting hypothesis 2.

Table 4.44 shows that the only significant difference between mean scores is between female science and arts teachers rejecting hypothesis 2, hypothesis 1 is retained as the mean scores of male and female teachers do not differ significantly from each other.

Table 4.45 shows that the variations in the mean scores of this ninth area enthusiasm of T.A.T. shows the same pattern as for the other areas which are of similar application for both male and female teachers. As regards faculty and experience, the differences have occurred because the female teachers of the first experience group in the science faculty are superior to the corresponding teachers in other groups-male or female.

PART III

4.20 CORRELATION :

In this part the correlation between the teaching efficiency and teaching aptitude has been studied. In all there were 33 correlation coefficients calculated.

The whole sample was of 480 teachers, the other subgroups sexwise and facultywise were of 240 teachers each. The subgroups according to experience and sex were of 80 teachers, the subgroups according to experience and faculty were of 80 teachers. The subgroups of experience total for each facultywise distribution in the two sexes and the sexwise distribution of faculty groups was of 120 teachers each. The individual subgroups of the division of the sample sexwise, facultywise and experiencewise was of 40 teachers. The correlation coefficients are shown in Table 4.46.

(A) The Correlation coefficients were significant for the following groups, rejecting hypothesis 4.

1. Whole sample of 480 teachers.
2. Total male and female teachers.
3. Total arts and science teachers.
4. Male arts teachers.
5. Female science teachers.

(B) Correlation coefficients were non-significant for the two groups-male science teachers and female arts teachers-retaining hypothesis 4.

(C) In the experience groups the relationship were significant in the following three groups rejecting hypothesis 4.

1. Male arts teachers of third experience group.
2. Female science teachers of second and third experience groups.

(D) In all the other sub-groups the correlation between teaching efficiency and teaching aptitude is non-significant, retaining hypothesis 4.

4.21 FINDINGS :

The study of the teaching efficiency and teaching aptitude revealed the following facts as shown in Table 4.47 :

(A) EFFICIENCY :

1. The efficiency of the whole group was not satisfactory. It was on the lower side of average.
2. The efficiency of male and female teachers differed significantly. The efficiency of females was higher in the science faculty while the efficiency for male arts teachers was higher.
3. The difference in the two areas of efficiency TVC and TSC. The differences between male and female teachers was

significant while the differences in TPC was non-significant.

4. The differences in efficiency in the sample groups according to faculty were not significant.

5. The difference in the three experience groups in efficiency was significant in all the subsets also.

6. The efficiency scores differences were not significant in facultywise experience groups and in the subgroups of efficiency TVC, TPC and TSC in the sexwise, facultywise and experience.

(B) APTITUDE :

1. There is no significant difference in the aptitude of teachers of two sexes in the first area cooperative attitude.

2. The difference in the different area of aptitude when sample is divided according to faculty is significant in all areas except 3 (Patience), 7 (Discipline) and 8th (Optimism).

3. In the division of the whole sample according to experience the mean scores differ significantly in the area (1) cooperative attitude, (2) Kindliness, (3) Patience, (6) Moral character and (9) Scholarly taste.

4. When the sample is divided sexwise and faculty wise, the mean scores differences are significant only in the areas (3) Patience, (6) moral character of T.A.T.

5. When the sample is divided sexwise and experience, the differences between mean scores are non-significant in the following areas of T.A.T. 3 (Patience), 6 (Moral character), 8th (Optimism), 9th (Scholarly taste) and 10th (Enthusiasm).
6. When the sample is divided facultywise and experiencewise the areas of significant differences in mean scores of aptitude are 1 (Cooperative attitude) and the 6th area (Moral character).
7. When the sample is divided according to sex, faculty and experience the differences are significant in the mean scores in the areas of aptitude total TAT, 1 (Cooperative attitude), 2 (Kindliness), 6 (Moral character).

(C) CORRELATION :

There is a definite correlation between teaching efficiency and teaching aptitude.

CHAPTER- V

- 5.1 Introduction
- 5.2 Summary of Work
- 5.3 Main Findings and Conclusions
- 5.4 Suggestions

CHAPTER- V

5.1 INTRODUCTION :

V.Narayan Karan Reddy in his book 'Man Education and Values' has expressed the view that Education is a relentless process of becoming."¹

"In Ancient India, The aim of life was the intrinsic realisation of the ideals involved in 'Purusharthas'. this brought the aim of education nearer to the aim to human life. But in the subsequent ages due to the growth of complex knowledge and multiple theories clearcut evaluation and assessment of the linear processes involved in education were not properly controlled or organised by theorists and educationists. In modern times the problem of education has been approached from descriptive and prescriptive angles. These give rise to corresponding aims of education."²

"The aims of education present a curious anomaly. Education as such has no aims. Only parents, pupils and teachers' have aims."³

It is evident the education has no meaning except in

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1. P.49, "Man, Education and Values"- V. Narayan Karan Reddy, B.R. Publishing Corporation, 1979, New Delhi, 110002- Rs. 50/-
 2. P. 50, 52, Ibid.
 3. P. 57, Ibid.

the context of society and the individual, the aims of the parents or guardians for the pupils is fulfilled by the teaching process of the teacher. The teacher is therefore a vital part of the educational system. So in Education one of the first points where one would think of starting to look for solutions to any problems is the teacher. The teachers of the secondary level assumes more importance in a way than the teachers of any other level. The students at the secondary level are entering into the adolescent stage which is the most important development stage for the child. Also from the point of view of Education, the secondary level is the stage where the whole future education, its quality and direction are decided. This is the stage where the pupils start exhibiting their innate qualities. The teachers is the person who has to recognise these qualities and give the proper directions for their developments not only to the pupils themselves but to the parents also. So the work of the teacher is efficiency at this level is of great importance. The study of teaching efficiency of teachers at the secondary stage can tell us if the defects at this level is due to some lack in the teachers performance. It can also tell us where and what remedial measures should be taken. It can also aid us in the formulation of the norms for teacher selection etc.

One trait in a teacher that can be expected to be effective in ensuring efficiency is Aptitude. Aptitudes are the inherent qualities in any persons for the job that they are entrusted to do. Aptitude is that innate quality which makes a

person fit to carry out the task in hand. These traits are individual to each kind of activity. These innate qualities some times are exposed early and help not only the individual in understanding his inclinations, create interest in the peoper channel etc. This trait of Aptitude is being given more and more recognition in the Education fields. Today we find that finally this has been recognised as an important aspect in Education. The Teacher trainees are now tested for Teaching Aptitude before selection for training.

We have roughly 3 generation of teachers in active performance of the teaching process since Independence. The first group is of the teachers who have put in less than 10 years of service. These teachers have to face in a way a very much different conditions from every point of view who joined the teaching profession more than 20 years back. Those of the older generation who entered the profession in the first lap after Independence had to fit in, in the changing period. National ideals were being proposed and National policy was being implemented in all activities of society New concepts , new courses new methods of teaching, new aims of education, modified concept of the teacher. His woriking conditions etc. Was being put into practice. The knowledge exploding and the resulting curriculam changes are in themselves sufficient to create a difference in the teacher quality in the generation gap. But one thing is common to all 3 genertations, the pupils the same group of pupils has to be taught by the teacher

irrespective of the age of the teacher. The pupils has to come into contact with all the teachers in the institution irrespective of the generation to which the teacher belongs. In the training programs instituted in the New Education Policy¹ the initial decision was to exclude the senior most teachers who had less than five years of service left from training. But later this was ruled out and the training program were extended to all teachers irrespective of the period of service left. The differences due to experience can be beneficial as regards the ability for change and retrograde too. The attitude, rigidity to change, better assessment of situation and understanding of circumstances, awareness of the need for change and therefore readiness etc. are all aspects that are associated with experience.

The factors that have been chosen with Experience is the sex of the teachers and the subject that they teach. Those two factors are important in Education. The rapport and quality of any ability is different in both sexes. These two factors are effective in the quality of teaching. In Aptitude for teaching, it is not only is the general aptitude, but there are special aptitudes associated with every skill involved in any activity so it is logical to suppose that teachers of different subjects should have the special aptitude for that subject. In this work the special aptitude has not been measured but the general aptitude of teachers of the Arts and Science faculty have been taken for study. This study therefore deals with the following areas :

(1) Male and female Arts and Science Teachers of Higher Secondary Colleges of Kanpur city (total 480 teaches).

(2) Teachers of 3 spans of experience :

1st span - upto 10 years experience

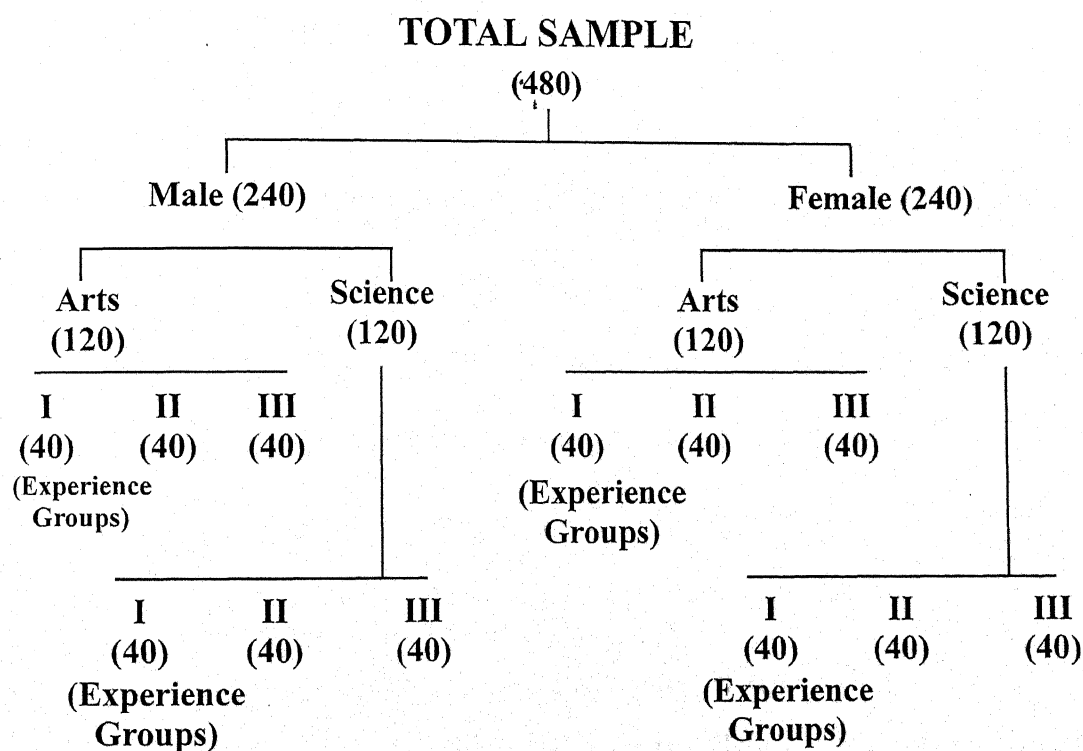
2nd span - upto 11 to 20 experience

3rd span - 21 years and above.

(3) Evaluation of teaching Efficiency and Teaching Aptitude.

The title of the work therefore is "A Study of the Teaching Efficiency and Teaching Aptitude in relation to Experience of Male and female Arts and Science Teachers of Intermediate colleges of Jhansi Mandal Jhansi.

The sample was as given as below :



5.2 MAIN FEEDINGS AND CONCLUSIONS :

Hypothesis was that there is no difference in the sample in Teaching Efficiency, Teaching Aptitude due to sex or faculty in all the groups divided on the basis of experience also. The relation between Teaching Efficiency and Teaching Aptitude was also studied. The VTTP (Verma's Test for Teaching proficiency) made by Dr. Mithilesh Verma was used for measuring Efficiency. For measuring Teaching Aptitude the T.A.T. (Teaching Aptitude Test) Constructed by Dr. Jai Prakash and Dr. P. Srivastava and prepared by Dr. S.D. Kapoor was used. The statistical techniques used were the mean, S.D., analysis of variance and correlation. The calculations were done on the computer :

Analysis of the data gave the following information.

(A) EFFICIENCY :

- (1) The efficiency in general of all the teachers was on the lower side of average.
 1. Female science teachers being better than the others.
 2. Male teachers of the 3rd efficiency span that is of 21 and above years of service were the best.
 3. For female teachers the teachers of the first experience span upto 10 years service were better.
 4. The best efficiency level was in the TPC or personal characteristics and then in the T.V.C. the vocational

characteristics. It was lowest for the TSC the Social characteristics.

(B) APTITUDE :

- (1) The Aptitude scores were average on the whole. In certain areas (3) Patience, (7) Discipline, they were low. They were better in the areas of cooperative attitude (1) and (2) Optimism. In the other areas the mean scores were at the lower limit of High level.
- (3) The Aptitude difference between the sexes showed the same pattern as for efficiency among the groups.
- (4) Correlation : Except in a few cases the efficiency has a positive significant correlation with Aptitude.

INFERENCES

EFFICIENCY

Table 5.2

Significance of Variance

	SexA	FacultyB	Experience	AB	AC	BC	ABC
Total	Sig	N.S.	Sig	Sig	Sig	N.S.	N.S.
TVC	Sig	N.S.	Sig	N.S.	Sig	N.S.	N.S.
TPC	N.S.	N.S.	Sig	Sig	N.S.	N.S.	N.S.
TSC	Sig	N.S.	Sig	Sig	Sig	N.S.	N.S.

From the above Table 'F' values shows that only in the TPC area there is no difference between males and females.

This shows that there is a significant difference in the efficiency of male and female teachers. This is also exhibited in the groups when divided according to experience. This result is supported by the assumption that male and female teachers are different in their approach for the tasks performed by them. Previous studies by sharma, Rasool and Suri, Jayaswal, Pillai Agarwal found significant differences due to sex in attitudinal studies while Sharma, Marr and Gupta, Banoo, Chandra, Singh, Kantawala, Satyanandan found no difference due to sex in certain personality factors as in shown in the results for T.P.C.]

The generation gap shows that whatever the criterion for selection adopted in the early days after Independence have given better results. In spite of our better resluts. In spite of our better training programs and other improvements not only in teacher training but in the overhauling of the school system the efficiency quality is not satisfactory. What is needed is to find out why the efficiency is not upto the mark. How and where it is to be remedied. That no remedy is necessary is out of question. The problem that is now facing us is how to improve this efficiency in the existing circumstances. The questions is do we need a total overhaul or is the kind or patch work improvement being used effective. One fact is clear that a complete overhauling is not economically or practically possible uprooting the majority of teachers or changing the whole system is not possible. The economic aspect of teacher

job satisfaction is not longer a problem. We have to device inducements for the teachers to make them more dedicated and involved with their teaching work. Only by such measures can we start the process of improvement of efficiency. And one aspect is ofcourse the appointment of new staff. These should be screened not only at the time of apointment but at the earlier stage of pretraining selection period.

Table 5.3

	A	B	C	AB	AC	BC	ABC
Total	NS	Sig	Sig	NS	Sig	NS	Sig
1	Sig	Sig	Sig	NS	Sig	Sig	Sig
2	NS	Sig	NS	NS	Sig	NS	Sig
3	NS	NS	Sig	Sig	NS	NS	NS
4	NS	Sig	Sig	NS	Sig	NS	NS
5	NS	Sig	NS	NS	Sig	NS	NS
6	NS	Sig	Sig	Sig	Sig	NS	NS
7	NS	NS	NS	NS	Sig	Sig	NS
8	NS	NS	NS	NS	NS	NS	NS
9	NS	Sig	Sig	NS	NS	NS	NS
10	NS	Sig	NS	NS	NS	NS	NS

APTITUDE :

It is clear from the Table No. 5.3 of the significance of 'F' in the different area of T.A.T. of the different groups. There is no difference in the Aptitude due to sex except in the 1st area of cooperative Aptitude. This is supported by the conclusions from those researches where they have found concrete differences due to sex cooperative Attitude in an emotional rapport. The female teachers are better in this respect. This fact supports the fact that females should be preferred at the secondary stage. But in having same sex teachers should not be a very big handicap.

The results of the differences due to faculty in not significant in those characteristics which are what can be termed universal. These are the areas (3) patience, (7) Discipline and (8) Optimism. Whatever Subject the teacher teaches these 3 characteristics are important in the same manner. Also on these 3 areas the mean scores are low. This shows that in the teachers selected for this sample there is a lack of patience, not sufficient attention for maintenance of discipline and a general apathy and lack of optimism. We can conclude that the teachers that are now involved in the profession lack these 3 qualities. We should try to find out the reason for this situation and try to so it. But in the other areas the Science teachers are better than the Arts teachers in the case of Males. In the case of Females teachers the science teachers of the 1st Experience

group have better mean scores than those of the other two experience groups. This means that the female teachers of the newer generation of lesser experience span have better aptitude. So in that respect we should conclude that our improvement or changes are effective at least for a small extent.

This is further supported by the significant difference in the different experience span groups in the various areas of Aptitude. The only areas where experience has shown no significance are (2) Kindliness (5) Fairness, (7) Discipline, (8) Optimism and (10) Enthusiasm.

Except in the area of Kindliness and fairness, in the other areas the mean scores are also low. The conclusion we come to is that the newer teachers should be made to adopt the approach of the older generation of teachers in these aspects. Learning is also a form of imitation we immitate and modify it according to our personallity to make it effective. The pattern of behaviour has to be decided upon and learnt in many cases only in the course of experience. A better contact between the different generations of teachers and mutual consultation can be a suitable remedial measure for this situation.

Another fact that we can realise from this study is that teachers of Science are better in every respect than Arts teachers. The reason may be lies in the fact that even in the early education period of a child the science students are

screened before getting permission for studying science. Then education being economically more costly the class of pupils who study science are of a higher social status and generally can be expected to be of a higher calibre. Also the number of seats in the science classes is restricted. All this can make the teaching of science and therefore the Science students better than that of Arts, there is no cut and dry policy we can adopt in this case. Universal compulsory education and various reservations do not allow us to control the quality of the students we teach for suitability for that particular education. These are odds that have always impeded the educational progress in our country. Taking all these facts into consideration in the existing situation a few remedial measures could be taken without much upheaval. The first one seems to be a reorientation of the teachers. All refresher courses, special training programs are oriented towards acquainting the teachers with new techniques. If we could organise these programs so that the dedication to the profession is rekindled in the minds of the teachers a lot of the present problems can be if not fully but certainly to a large extent resolved. This type of emotional and attitudinal orientation will also make the programs themselves more effective because the teachers will be ready to accept and adopt the new innovations. I myself have attended quite a number of these seminars, workshops etc. My findings were that almost all the participants came especially for economic benefit from T.A., D.A. another part

came to present their papers for recognition only a very small percentage were present to try and benefit from these programs.

One of the reasons for the apathy towards these programs is lack of practical applicability of these programs. Not only are the workshops and totally theoretical but they are not even able to provide a proper practical demonstration. If the suggestions and innovations cannot be used in the practical actual situations, these programs are a waste of time, effort and money. Some of these programs are held because that particular Institution has to show the Organisation and execution of such programs. If the teachers concerned are first contacted, their problems identified and discussed in relation to actualities and most important of all practice also be given these remedial will prove effective.

★ Another point that comes to mind is that the teachers should be asked to discuss their professional activities with a committee of people active in that institution with the principal or head as a member. In such discussions the individual problems of the teacher can be identified, analysed and the suitable corrective measures also investigated. This can help in many cases in the allotting the proper subjects for teaching to the teacher with suitable abilities. These internal institutional organisations are neither complicated nor impossible. By adopting such measures we can be sure that efficiency can definitely be improved. This will also ensure that the teachers

are having teaching responsibilities suited to their aptitudes as far as possible. A total overhauling is neither possible nor feasible. Our aim is to modify in the existing conditions. An example of the success of this type of remedial practices is the school circle (VIDYALYA SANKOOL) proposed and adopted in the New Education Policy.

5.3 SUGGESTIONS :

The scope of a research project is restricted due to considerations of time, money, feasibility etc. This work itself could have been done in various ways. The teachers with different Aptitude levels studied for Efficiency and experience. The Aptitude and experience of teachers studied in relation to different levels of Efficiency. The profiles of the teachers Efficiency etc. All could have been also studied.

Future work of clause could be done in these aspects suggested. Different groups of teachers, other qualities of teachers Socio-economic condition, academic achievement to teachers, family type, Age at beginning of service. Family size, cultural economic and social background etc. are all factors that can give valuable knowledge in relation to Efficiency. Besides these teachers of different levels of Education. Different denominations etc can be studied with advantage on the whole, It can be said that this work is only an introduction to the researches that are not only necessary but can be done in this areas.

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कृपया निम्न गुणों पर शिक्षक का मूल्यांकन कीजिए :-

नाम शैक्षिक योग्यता

विद्यालय

गुण	बहुत अधिक	अधिक	सामान्य	कम	बिल्कुल नहीं
DURIFUL - कर्तव्य परायण
Impartial- निष्पक्ष
Self -Confidence- आत्म विश्वास
Good Expression - अच्छी अभिव्यक्ति
Punctuality - समय की पाबन्दी
Discipline loving - अनुशासन प्रिय
Mentally Healthy - मानसिक रूप से स्वस्थ
Present minded -
Resourceful-साधनयुक्ता (उपलब्ध सामग्री से कार्य पूरा करना)
Scholarshiip - विद्वता
Helping Attitude - सहायता पूर्ण भावना
Industrious - मेहनती
Composde - सतुलित व्यक्तित्व
Patience - धैर्य
Good Administratar - अच्छा प्रशासक
Impressive Personality - प्रभावपूर्ण व्यक्तित्व
Wide Interests - व्यापक रुचियाँ
Accomodating - परिस्थिति अनुकूलता
Simplicity - सादगी
Sence of humour - सद्भावना
Sociability - सामाजिकता
Dynamicity - गत्यात्मकता (व्यवसाय में क्रियाशीलता)
Sporting spirit - समन्वित भावना
Resolutewill - दृढ़ता
Political Mindedness - राजनीतिक झुकाव

T A T

by

Dr. JAI PRAKSH and R. P. SRIVASTAVA

निर्देश

1. निम्नलिखित निर्देशों को ध्यान पूर्वक पढ़िये।
2. यदि निर्देशों में कोई बात समझ में न आये तो परीक्षक से अवश्य पूछ लीजिये।
3. कृपया उत्तर पत्र में अपना नाम, योग्यता, आयु, पद, आदि स्पष्ट लिखिए। इस पुस्तिका में न तो कुछ लिखिये और न ही किसी प्रकार का चिन्ह बनाइये।
4. उत्तर देते समय सामान्य परिस्थिति के विषय में सोचिए, किसी विशेष स्थिति का विचार न कीजिए।
5. उत्तर देने के लिए समय का कोई बन्धन न ही है, किन्तु जितनी शीघ्रता से हो, काम कीजिए।
6. कृपया प्रत्येक वक्तव्य का उत्तर दीजिए।

उत्तर लिखने की विधि

इस पुस्तिका में 150 वक्तव्य दिए गए हैं जिनके द्वारा आपके अध्यापन सम्बन्धी विचारों का पता लगाने का प्रयत्न किया गया है। प्रत्येक वक्तव्य को पढ़िये और निर्णय कीजिए कि आपका क्या विचार है या आप कैसा अनुभव करते हैं। जैसा भी आपका विचार हो या जैसा भी आप अनुभव करते हों वैसा अपना उत्तर दिये हुए उत्तर-पत्र पर यथा-स्थान लिखिए।

यदि आप दिये हुए वक्तव्य से पूर्ण सहमत हों तो पू० स० के नीचे बने खाने में सही का () चिन्ह बना दीजिए।

यदि आप दिये हुए वक्तव्य से सहमत हों, तो स० के नीचे बने खाने में सही का चिन्ह बना दीजिए।

यदि आप अनिश्चित या द्विविधा में हों तो द्वि० के नीचे बने खाने में सही का चिन्ह बना दीजिए।

यदि आप दिये हुए वक्तव्य से असहमत हों तो अस० के नीचे बने खाने में सही का चिन्ह बना दीजिए।

यदि आप दिये हुए वक्तव्य से पूर्ण असहमत हों तो पू० अस० के नीचे बने खाने में सही का चिन्ह बना दीजिए।

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जब तक कहा न जाये, कृपया पन्ना मत उलटिये।

भाग (PART) 1

1. बहुधा अध्यापक को दूसरे के साथ काम करने एवं दूसरों के लिए काम करने में आनन्द मिलता है।
2. सामान्यतया अध्यापक को दूसरों का सहयोग प्राप्त करने में सफलता मिलती है।
3. विद्यालय में और विद्यालय के बाहर दूसरे व्यक्तियों को अध्यापक की आवश्यकता होती है।
4. कक्षा के नियम और उपनियम ऐसे होने चाहिए कि कोई भी उनका उल्लंघन न कर सके।
5. अधिकांशतः विद्यार्थी अध्यापकों को परेशान व नाराज करने के लिए ही दुर्व्यवहार करते हैं।
6. छात्रों को अपने अध्यापकों से खुले रूप में असहमत हो सकने का अधिकार है।
7. यह संसार सहयोग की भावना पर ही चलता है।
8. अच्छी व्यवस्था के लिए दृढ़ शासन की आवश्यकता होती है।
9. विद्यालय की व्यवस्था में छात्र परिषद् का सहयोग अधिक अच्छा है।
10. समाज हमारे लिए है और हम समाज के लिए हैं।
11. यह आशा नहीं करनी चाहिए कि छात्रों को विद्यालय में विनोद मिलेगा।
12. आजकल भी प्राचीन काल की तरह छात्रों को कठिन दण्ड देने की आवश्यकता है।
13. बहुत से विद्यार्थी अध्यापक के लिए बहुत-सी चीजें सरल बना देने का प्रयास करते हैं।
14. विद्यालय के प्रबन्ध एवं व्यवस्था का उत्तरदायित्व केवल उसके प्रधानाध्यापक पर होता है।
15. छात्रों को अध्यापक की सभी बातों को मानना चाहिए क्योंकि अध्यापक कक्षा में सर्वोपरि है।

भाग (PART) 2

16. अध्यापक समाज में विनम्र एवं विचारशील होने का प्रयास करता है।
17. यदि बच्चे की व्यवस्था करने में अभिभावक असमर्थ हो तो अध्यापक द्वारा यह कार्य पूरा नहीं किया जा सकता।
18. बहुत से विद्यार्थी, जब उन्हें स्वयं पर छोड़ दिया जाता है, अधिक प्रयत्नशील हो जाते हैं।
19. सभी बच्चों की एक साथ कक्षा-वृद्धि कर देने से उनके अर्जित ज्ञान का स्तर गिरता है।
20. जो अध्यापक अधिक लोगप्रिय होते हैं वे सम्भवतः अपने विद्यार्थी को अधिक अच्छी तरह समझते हैं।
21. अधिकतर अध्यापक अपने छात्रों के प्रति बहुत ही उदार होते हैं।
22. यदि बच्चों को उन्हीं के ऊपर छोड़ दिया जाय तो वे अपने लिए स्वयं विचार करेंगे।
23. बच्चों के संवेगात्मक जीवन तथा उससे सम्बन्धित समस्याओं पर ध्यान देना चाहिए।
24. अध्यापकों को अपने छात्रों की घरेलू परिस्थितियों की जानकारी भी रखनी चाहिए।
25. बच्चों की रुचि को स्कूल के काम का आधार बनाना व्यवहारिक नहीं है।

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26. बहुत से बच्चों में अत्यधिक कल्पना पाई जाती है।
27. अध्यापक को लड़ाकू और उदण्ड बालकों पर विशेष ध्यान देना पड़ता है।
28. सब बच्चे, बच्चे हैं अतः उनकी समस्याओं का समाधान सामूहिक ढंग से कर देना चाहिए।
29. यह सम्भव नहीं है कि अध्यापक कक्षा के सभी छात्रों की कठिनाइयों को जान सकें।
30. बालकों की वैयक्तिक भिन्नताओं को ध्यान में रखकर पढ़ाना सम्भव नहीं है।

भाग (PART) 3

31. कोई चीज गलत भी हो जाती है तब भी अध्यापक अपने ऊपर संयम रखते हैं।
32. अध्यवसायी छात्र निश्चय ही किसी के धैर्य को हिला देते हैं।
33. कुछ ऐसे भी क्षण होते हैं जब अध्यापक विद्यार्थी के प्रति धैर्य खो दें, तो उसे दोष नहीं दिया जा सकता।
34. बहुधा अध्यापक बार-बार बालकों को एक ही चीज समझाने में असफल होने पर क्रुद्ध एवं अप्रसन्न हो जाते हैं।
35. कक्षा में मन्द बुद्धि के बालक अध्यापक के लिए एक विकट समस्या उत्पन्न कर देते हैं।
36. अध्यापक के चारों ओर घर, विद्यालय समाज तथा स्वयं की समस्या ही समस्या है। उन पर विजय पाकर वह अपने पवित्र कार्य में धैर्य पूर्वक संलग्न रहता है।
37. कभी-कभी प्रखर बुद्धि के बालक अनुशासन सम्बन्धी असाध्य समस्या उत्पन्न कर देते हैं।
38. बहुधा असफलतायें सफलताओं से अधिक श्रेयस्कर प्रमाणित होती है।
39. अध्यापक पर बालक, समाज और राष्ट्र के प्रति इतने अधिक उत्तरदायित्व हैं कि यदि वे अपना धैर्य खो भी दें, तो अनुचित नहीं है।
40. अध्यापक के बार-बार सुधारने पर भी यदि बालक नहीं सुधरता, तो अध्यापक भी उसकी परवाह नहीं करता।
41. कभी-कभी अध्यापक अपने घर का क्रोध स्कूल में बालकों पर उतारा करते हैं।
42. अध्यापक परीक्षा काल में अपने धैर्य एवं संलग्नता को बनाए रखते हैं।
43. बालक सुयोग्य नागरिक बनने के पथ पर हैं इसलिए अध्यापक धीरे-2 धैर्य पूर्वक उन्हें आगे बढ़ाते हुए चलता है।
44. सामाजिक और आर्थिक समस्याओं में फँसकर अध्यापक भी अपना धैर्य खो बैठते हैं।
45. बहुधा अध्यापक विद्यालय के प्रति अपना क्रोध अपने बाल-बच्चों पर उतारा करते हैं।

भाग (PART) 4

46. अध्यापक नये विचार तथा नवीन विधियों को जानना और उनका प्रयोग करना पसन्द करते हैं।
47. एक अध्यापक से यह आशा नहीं करनी चाहिए कि वह अपने सायंकालीन मनोरंजन की बलि देकर एक विद्यार्थी के घर जाकर मिले।
48. अध्यापक भी गलत हो सकता है जैसे कि छात्र।

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49. बालकों में तीव्र जिज्ञासा पाई जाती है।
50. व्यक्तिगत उद्देश्य और सामाजिक उद्देश्य एक दूसरे के पूरक हैं।
51. शिक्षा प्रत्येक बालक को समाज में रखकर उसकी विशेषताओं को विकसित कर उसे समाजोपयोगी बनाती है।
52. अध्यापक बालक, विद्यालय, समाज और सरकार के प्रति उत्तरदायी होते हैं।
53. अध्यापक बालकों के उचित विकास के लिए उपयुक्त वातावरण निर्मित करते हैं।
54. वास्तव में अध्यापक शिशुओं, बालकों, किशोरों और प्रौढ़ों में रुचि रखते हैं।
55. कक्षा में बच्चों को जितनी स्वतन्त्रता दी जाती है उससे अधिक देनी चाहिए।
56. शिक्षा का रूप समय और परिस्थितियों के अनुसार परिवर्तित होता रहता है।
57. अध्यापक विद्यालय में शिक्षक, खेल के मैदान में खिलाड़ी और समाज में सामाजिक कार्यकर्ता के रूप में रहते हैं।
58. बहुधा बालक कक्षा में अधिक सामाजिक होते हैं।
59. अक्षर ज्ञान को शिक्षा कहना गलत है।
60. अध्यापक का अध्यापन क्षेत्र केवल पुस्तकों तक ही सीमित नहीं रहता बल्कि इसके आगे भी होता है।

भाग (PART) 5

61. अध्यापक अपने व्यवहार में ईमानदारी तथा निष्पक्षता के ऊँचे विचार रखते हैं।
62. बच्चों के बारे में निर्णय 'देखकर' करना चाहिए न कि 'सुनकर'।
63. अध्यापक में भी कुछ न कुछ कमी होती है।
64. बालकों पर जो प्रतिबन्ध लगाए जाएँ उनका कारण उन्हें बता देना चाहिए।
65. धोखे बाजी द्वारा प्रकट होने वाली बेईमानी सम्भवतः नैतिक अपराधों में सबसे अधिक गम्भीर हैं।
66. न्याय एवं निष्पक्ष व्यवहार ही कक्षा के अनुशासन को सुव्यवस्थित करते हैं।
67. सत्य, अहिंसा, प्रेम और न्याय ही समाज के चार आधार स्तम्भ हैं, इन्हीं पर समाज खड़ा हुआ है।
68. अध्यापक निर्धन एवं दुर्बल विद्यार्थियों के सम्भवतः अधिक अंक दे दिया करते हैं, जिससे उनका वर्ष बेकार न जाने पाए।
69. आधुनिक युग की सब से बड़ी माँग है निष्पक्षता और ईमानदारी।
70. कुछ धनी एवं प्रतिष्ठित व्यक्तियों के बालकों को अपेक्षाकृत अधिक अंक मिल जाया करते हैं।
71. अध्यापक ज्ञान का वह महासागर है जिसमें अगणित नदियाँ बिना कुछ सोचे समझे मिला करती हैं।
72. स्वाभाविक रूप से बालक बहुत ही अच्छे पैदा होते हैं किन्तु वातावरण के कारण बुरे बन जाते हैं।
73. वर्गहीन समाज की स्थापना अध्यापक के हाथ में है।
74. छात्र के मूल्यांकन करने में उसकी अवाप्ति (Attainment) तथा प्रयत्न में भेद नहीं करना चाहिए।
75. छात्र द्वारा प्राप्त अंकों एवं डिग्रीजन को दण्ड के फलस्वरूप कम नहीं करना चाहिए।

भाग (PART) 6

76. अध्यापक के विचार तथा उसकी योजनायें दूसरों में अनुकरण की प्रवृत्ति उत्पन्न करती है।
77. अध्यापक अपने कार्य में सावधानी, सम्पूर्णता और यथार्थता का ध्यान रखते हैं।
78. अध्यापक को जितना वेतन मिलता है उससे अधिक काम करने की अपेक्षा नहीं करनी चाहिए।
79. अधिकांश छात्र अपने अध्यापकों का ख्याल रखते हैं।
80. विद्यार्थी की असफलता के लिए अध्यापक कदाचित भी दोषी रहते हैं।
81. निर्भीक होने की अपेक्षा लज्जाशील होने अधिक उचित है।
82. सम्भवतः अध्यापक विद्यार्थी के गन्दे और भदे वाक्य लिखने को अत्यधिक गम्भीर दोष मानते हैं।
83. सादा जीवन और उच्च विचार अध्यापक का भूषण हैं।
84. आज भी चरित्र सर्वोपरि हैं।
85. कार्य करते रहने की प्रवृत्ति की कमी है सम्भवतः असफलता का सबसे प्रमुख कारण है।
86. अध्यापक की वेष भूषा तथा आकार प्रकार सामान्यता प्रशंसनीय रहते हैं।
87. शिक्षक को धन एवं स्वास्थ्य की अपेक्षा सम्मान अधिक प्रिय होता है।
88. अध्यापक एक सामान्य प्राणी है, उसमें भी चारित्रिक दोष हो सकते हैं।
89. बड़ुधा सभी अध्यापक निडर और निर्भीक होते हैं।
90. कर्तव्य और अधिकार में अध्यापक को आज अधिकार चाहिए।

भाग (PART) 7

91. अध्यापक दूसरों को निर्देश देने तथा अनुशासन रखने में समर्थ होते हैं।
92. अधिकांश बालक आज्ञाकारी होते हैं।
93. साधारण अनुशासन की समस्या को गम्भीर बनाने की अपेक्षा सरलता से कभी-कभी हंसी में सुलझा देना चाहिए।
94. यदि अध्यापक कक्षा में किसी बात पर छात्रों के साथ हंसता है तो कक्षा नियन्त्रण के बाहर हो जाती है।
95. कक्षा में अच्छा अनुशासन स्थापित करने के लिए अध्यापक को कठोर होना चाहिए।
96. अनुशासन सम्बन्धी समस्याओं को रोकने की अपेक्षा उनका सुलझाना अधिक आसान है।
97. अनुशासन सम्बन्धी कठिन समस्या के लिए अध्यापक का दोष बहुत कम होता है।
98. अनुशासन रखना समस्या नहीं है, जबकि अधिकतर अध्यापकों को कहना है कि यह एक बड़ी समस्या है।
99. छात्र अध्यापक को परेशान करना चाहते हैं।
100. कक्षा से भागने वाले विद्यार्थियों के प्रति सहानुभूति प्रदर्शित नहीं करनी चाहिए।
101. कक्षा को नियमानुकूल रखने पर बहुत जोर दिया जाता है।

पू0स0 = पूर्ण सहमत, स0 = सहमत, द्वि0 = द्विविधा, अस0 = असहमत, पू0अस0 = पूर्ण असहमत

102. गन्दे तथा भदे वाक्य लिखते हुए पाए जाने वाले छात्रों को कड़ी सजा देनी चाहिए।
103. बच्चों को यह सीखना चाहिए कि वे बिना प्रश्न किये ही बड़ों की आज्ञा मानें।
104. बाह्य अनुशासन स्व-अनुशासन से अधिक अच्छा है।
105. आजकल अधिकतर अध्यापक अनुशासित न होकर दूसरों को अनुशासित करने पर अधिक जोर दिया करते हैं।

भाग (PART) 8

106. कक्षा में कभी-कभी छात्र बहुत ऊबते हैं।
107. अध्यापक का वेतन और सम्मान दोनों कम हैं, पर वे निराश नहीं होते हैं।
108. अध्यापन कार्य नीरस होता है।
109. अध्यापन-कार्य भी एक विचित्र व्यवसाय है, जिसमें सदैव बच्चों के साथ रहकर बच्चे ही बने रहना पड़ता है।
110. अध्यापक एक बाल बाटिका का माली है, वह दिन-प्रति दिन उनके फलने-फूलने की आशा करता है।
111. प्रायः शिक्षक अपने व्यवसाय से सन्तुष्ट नहीं रहते हैं।
112. बहुधा अध्यापक स्वयं प्रसन्न मुद्रा में रहते हैं और दूसरों को प्रसन्न बना देते हैं।
113. अध्यापक अपने कार्य एवं विचारों में विश्वास रखते हुए उत्तरोत्तर उन्नति की आशा करते हैं।
114. अध्यापक स्वतः नये वातावरण में बड़ी सुगमतापूर्वक अपने को अनुकूल बना देते हैं।
115. सामान्यतः अध्यापक प्रत्येक कार्य के आशायुक्त पक्ष की ओर देखते हैं।
116. अध्यापक स्वयं योजना बनाते हैं और उसे क्रियान्वित कर शुभ लाभ की आशा करते हैं।
117. अध्यापक वर्तमान से सन्तुष्ट होकर सदैव सुन्दर भविष्य की आशा करते हैं।
118. अध्यापक विनोदमय वातावरण में रहते हैं और उसको उत्पन्न करते हैं।
119. कर्म पर ही अधिकार है, इस प्रकार की भावना बहुधा अध्यापक के लिये कोरी कल्पना ही होती है।
120. आज के युग में यदि अध्यापक अपने व्यवसाय और जीवन के प्रति उदासीन रहें तो उन्हें दोषी नहीं कहा जा सकता।

भाग (PART) 9

121. विद्यालय की साहित्यिक तथा अन्य प्रकार की गोष्ठियों में अध्यापक का भाग लेना आवश्यक है।
122. अध्यापक का अधिकांश समय अध्ययन और अध्यापन में न व्यतीत होकर अन्य कार्यों में व्यतीत होता है।
123. अध्यापक के पास एक निजी छोटा पुस्तकालय होना चाहिए।
124. जैसे बच्चे नई मिठाइयों को देखकर ललचा जाते हैं, वैसे ही अध्यापक नई पुस्तकों को देखकर।
125. समाचार-पत्रों का पठन अध्यापक की एक दैनिक प्रक्रिया है।
126. अध्यापक जीवन-पर्यन्त विद्यार्थी बने रहते हैं।
127. पुस्तकें अध्यापक की पूंजी हैं।

पू०स० = पूर्ण सहमत, स० = सहमत, द्वि० = द्विविधा, अस० = असहमत, पू०अस० = पूर्ण असहमत

128. विद्वत् मंडली में अध्यापक सम्मिलित होकर आन्नद का अनुभव करते हैं।
129. अध्यापक अपनी मासिक आय का एक छोटा भाग पुस्तकें तथा मैगजीन खरीदने में व्यय नहीं करते।
130. ज्ञान वह प्रकाश है जिससे सारा संसार आलोकित होता है।
131. यह कहना ठीक नहीं है कि अध्यापक के सच्चे मित्र उनकी पुस्तकें होती हैं।
132. अध्यापकों से यह आशा नहीं करनी चाहिए कि वह अपना समय और धन कहीं दूर आयोजित सभा एवं गोष्ठी सम्मिलित होने के लिए व्यय करें।
133. सामान्यता अध्यापक अपने अध्ययन काल में अपने वर्ग के औसत छात्रों के ऊपर रहते हैं।
134. अध्यापक को अध्ययन के लिए समय नहीं मिलता।
135. बहुधा अध्यापक को अपने बारे में जानकारी नहीं रहती है।

भाग (PART) 10

136. अध्यापक में स्फूर्ति एवं शक्ति का कोष संचित रहता है।
137. अध्यापक केवल पुस्तकीय ज्ञान देने वाला ही नहीं बल्कि प्रेरणा का केन्द्र है।
138. सम्भवतः प्रेरणा एवं अध्यवसाय की कमी ही असफलता के प्रमुख कारण है।
139. जो छात्र अपने कार्य क्षेत्र में उत्साह, जोश और तल्लीनता दिखाते हैं, उन्हें अध्यापक भी चाहते हैं।
140. अध्यापक अन्य कर्मचारियों की भाँति एक कर्मचारी नहीं है, बल्कि वह एक समाज सुधारक तथा नेता है।
141. अधिकांश अध्यापक अपने विचारों को स्पष्ट एवं प्रभावोत्पादक ढंग से प्रकट नहीं कर पाते।
142. आज के अध्यापक से यह आशा नहीं करनी चाहिए कि वह विद्यालय के साथ-साथ समाज में भी अपना क्षेत्र रखे।
143. अध्यापक अपने कार्य में पूर्ण सावधानी बरतते हैं।
144. बालक एक पुस्तिका है, अध्यापक को उसका अध्ययन शुरू से अन्त तक करना चाहिए।
145. बालक स्फूर्ति तेज और शक्ति के संगम है।
146. अध्यापक अपने व्यवसाय की ही भाँति आलसी और सुस्त हो जाते हैं।
147. अध्यापक नित्य प्रति अपनी बालवाटिका को नवीन पुष्पों से सुसज्जित करने के लिए प्रयास करते हैं।
148. अध्यापक उत्साह तथा जोश में छात्रों से पीछे रहते हैं।
149. बहुधा अध्यापक बालकों में जिज्ञासा जगाने में असफल रहते हैं।
150. वे अध्यापक जिनमें उत्साह का अभाव रहता है, अपने अध्यापन कार्य में सफल प्रतीत होते हैं।

उत्तर पत्र (Answer Sheet for T.A.T.)

नाम (Name) योग्यता (Qualification) आयु (Age) पद (Designation)

अनुभव (Experience) वेतन (Salary) विद्यालय (Institution) पता (Address)

भाग 1			भाग 2			भाग 3			भाग 4			भाग 5		
क्र०	पू.स.	स.	क्र०	पू.स.	स.	क्र०	पू.स.	स.	क्र०	पू.स.	स.	क्र०	पू.स.	स.
1.	<input type="checkbox"/>	<input type="checkbox"/>	16.	<input type="checkbox"/>	<input type="checkbox"/>	31.	<input type="checkbox"/>	<input type="checkbox"/>	46.	<input type="checkbox"/>	<input type="checkbox"/>	61.	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	17.	<input type="checkbox"/>	<input type="checkbox"/>	32.	<input type="checkbox"/>	<input type="checkbox"/>	47.	<input type="checkbox"/>	<input type="checkbox"/>	62.	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	18.	<input type="checkbox"/>	<input type="checkbox"/>	33.	<input type="checkbox"/>	<input type="checkbox"/>	48.	<input type="checkbox"/>	<input type="checkbox"/>	63.	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	19.	<input type="checkbox"/>	<input type="checkbox"/>	34.	<input type="checkbox"/>	<input type="checkbox"/>	49.	<input type="checkbox"/>	<input type="checkbox"/>	64.	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	20.	<input type="checkbox"/>	<input type="checkbox"/>	35.	<input type="checkbox"/>	<input type="checkbox"/>	50.	<input type="checkbox"/>	<input type="checkbox"/>	65.	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	21.	<input type="checkbox"/>	<input type="checkbox"/>	36.	<input type="checkbox"/>	<input type="checkbox"/>	51.	<input type="checkbox"/>	<input type="checkbox"/>	66.	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	22.	<input type="checkbox"/>	<input type="checkbox"/>	37.	<input type="checkbox"/>	<input type="checkbox"/>	52.	<input type="checkbox"/>	<input type="checkbox"/>	67.	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	23.	<input type="checkbox"/>	<input type="checkbox"/>	38.	<input type="checkbox"/>	<input type="checkbox"/>	53.	<input type="checkbox"/>	<input type="checkbox"/>	68.	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	24.	<input type="checkbox"/>	<input type="checkbox"/>	39.	<input type="checkbox"/>	<input type="checkbox"/>	54.	<input type="checkbox"/>	<input type="checkbox"/>	69.	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	25.	<input type="checkbox"/>	<input type="checkbox"/>	40.	<input type="checkbox"/>	<input type="checkbox"/>	55.	<input type="checkbox"/>	<input type="checkbox"/>	70.	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	26.	<input type="checkbox"/>	<input type="checkbox"/>	41.	<input type="checkbox"/>	<input type="checkbox"/>	56.	<input type="checkbox"/>	<input type="checkbox"/>	71.	<input type="checkbox"/>	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	27.	<input type="checkbox"/>	<input type="checkbox"/>	42.	<input type="checkbox"/>	<input type="checkbox"/>	57.	<input type="checkbox"/>	<input type="checkbox"/>	72.	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	28.	<input type="checkbox"/>	<input type="checkbox"/>	43.	<input type="checkbox"/>	<input type="checkbox"/>	58.	<input type="checkbox"/>	<input type="checkbox"/>	73.	<input type="checkbox"/>	<input type="checkbox"/>
14.	<input type="checkbox"/>	<input type="checkbox"/>	29.	<input type="checkbox"/>	<input type="checkbox"/>	44.	<input type="checkbox"/>	<input type="checkbox"/>	59.	<input type="checkbox"/>	<input type="checkbox"/>	74.	<input type="checkbox"/>	<input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	30.	<input type="checkbox"/>	<input type="checkbox"/>	45.	<input type="checkbox"/>	<input type="checkbox"/>	60.	<input type="checkbox"/>	<input type="checkbox"/>	75.	<input type="checkbox"/>	<input type="checkbox"/>

उत्तर पत्र (Answer Sheet for T.A.T.)

नाम (Name) योग्यता (Qualification) आयु (Age) पद (Designation)
 अनुभव (Experience) वेतन (Salary) विद्यालय (Institution) पता (Address)

भाग 6				भाग 7				भाग 8				भाग 9				भाग 10			
क्र०	पू.स.	स.	दि.	अस.	पू.अस.	क्र०	पू.स.	स.	दि.	अस.	पू.अस.	क्र०	पू.स.	स.	दि.	अस.	पू.अस.		
76.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	91.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	121.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
77.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	92.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	122.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
78.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	93.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	123.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
79.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	94.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	124.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
80.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	95.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	125.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
81.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	96.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	126.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
82.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	97.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	127.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
83.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	98.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	128.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
84.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	99.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	129.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
85.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	100.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	130.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
86.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	101.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	131.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
87.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	102.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	132.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
88.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	103.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	133.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
89.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	104.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	134.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
90.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	105.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	135.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

APPENDIX II

SCORES OF MEANS OF TAT AND VTTP

Mean Scores for T. A. I of the Sample when divided accordings to Sex and Faculty

Area/Group	Total	M	F	A	Sc	MA	FA	MSc	FSc
1st	21.579	20.979	22.179	20.854	22.304	20.442	21.267	21.517	23.9
2nd	22.142	22.129	22.154	21.263	23.021	21.133	21.39	22.92	23.9
3rd	17.027	16.787	17.267	16.662	17.392	15.467	17.858	18.1	16.6
4th	22.567	22.621	22.513	21.513	23.979	21.308	21.00	21.933	24.6
5th	23.702	23.779	23.725	22.508	24.996	22.708	22.308	24.85	25.1
6th	22.622	22.487	22.867	21.529	23.825	21.825	21.233	23.15	24.5
7th	21.90	21.717	22.083	21.779	22.021	21.592	21.967	21.842	22.5
8th	21.948	21.671	22.225	22.037	21.858	21.942	22.133	21.40	22.3
9th	22.271	22.225	22.317	21.304	23.237	21.20	21.408	23.25	23.2
10th	23.965	23.776	24.158	23.108	24.84	23.025	23.192	24.517	25.1
Total	219.827	218.67	221.487	212.2	227.451	210.642	213.758	225.692	229.2

Mean Scores of I. A. I. for the Ist Experience (upto 10 Years) Groups

Area/ Group	Total	M	F	A	Sc	MA	FA	MSc	FSc
Ist	21.112	19.525	22.7	19.625	22.6	19.1	20.15	19.95	25.2
2nd	21.906	20.95	22.862	21.25	22.563	20.775	21.725	21.125	24.0
3rd	15.306	15.412	15.2	14.725	15.887	14.625	14.825	16.02	15.575
4th	23.668	22.487	24.85	21.862	25.47	20.825	22.90	24.15	26.80
5th	24.63	23.138	26.125	22.787	26.475	22.40	23.175	23.875	29.075
6th	24.349	21.32	23.387	21.112	23.587	20.8	21.425	21.825	25.35
7th	21.644	20.57	22.712	21.0	22.288	20.25	21.75	20.90	23.675
8th	22.031	22.92	22.05	21.862	22.20	22.50	21.225	21.525	22.875
9th	22.612	20.812	20.412	20.363	22.862	20.125	20.60	21.50	24.225
10th	23.931	23.225	24.662	23.012	24.851	23.25	22.825	23.20	26.50
Total	218.17	209.47	226.86	207.65	228.69	204.7	210.6	214.25	243.125

Mean Scores of T. A. T. for the 2nd Experience (11 to 20 Years) Groups

Area/ Group	Total	M	F	A	Sc	MA	FA	MSc	FSc
1st	21.25	21.275	21.225	20.662	21.838	21.825	21.85	21.275	21.225
2nd	21.656	21.75	21.56	20.638	22.675	19.85	21.425	23.65	21.7
3rd	17.524	17.512	17.537	17.3	17.75	15.675	18.925	19.4	16.1
4th	21.346	22.58	21.112	21.062	22.63	21.95	20.175	23.22	22.05
5th	22.957	23.477	22.437	22.552	23.362	22.53	22.575	24.425	23.3
6th	22.001	22.025	21.987	20.412	23.1	21.5	20.325	22.55	23.65
7th	21.764	22.35	21.187	22.512	21.95	22.85	22.175	21.95	20.2
8th	21.412	21.137	21.687	21.687	21.137	21.425	21.95	20.85	21.425
9th	22.366	22.638	22.1	21.72	23.012	21.25	22.2	24.055	22.0
10th	23.31	23.23	23.48	22.588	24.15	22.075	23.1	24.45	23.85
Total	216.187	218.085	214.287	211.637	220.737	226.35	215.125	218.087	214.187

Mean Scores of T. A. T. for the 3rd Experience (21 + Years) Groups

Area/ Group	Total	M	F	A	Sc	MA	FA	MSc	FSc
1st	23.375	22.138	22.612	22.275	22.475	21.5	23.05	22.775	22.17
2nd	22.862	23.688	22.037	21.9	23.825	22.775	21.025	24.000	23.05
3rd	18.249	17.412	19.087	17.962	18.537	16.1	19.825	18.725	18.35
4th	22.181	22.787	21.575	20.538	23.825	21.15	19.925	24.425	23.221
5th	23.66	24.12	22.612	22.187	25.15	23.2	21.175	26.25	24.05
6th	23.696	24.122	23.22	22.612	24.78	23.175	21.95	25.07	24.50
7th	22.262	22.175	22.35	21.825	22.70	21.675	21.975	22.675	22.725
8th	22.4	21.837	22.963	22.537	22.263	21.85	23.232	21.825	22.750
9th	22.869	23.225	22.412	21.825	23.812	22.225	21.425	24.225	23.4
10th	24.58	24.83	24.37	23.7	25.462	23.75	23.65	25.9	25.025
Total	224.39	225.438	223.237	215.817	232.36	214.4	217.225	236.475	229.25

**Mean Scores for V. T. T. P. of the whole sample and the groups when divided
according to experience**

Ist experience - Up 10 Years, 2nd experience - 11 to 20 Years, 3rd experience 21+ Years

	Total	Male	Female	Arts	Science	Male Arts	Female Arts	Male Sc.	Female Sc.
Whole Sample									
Total	27.227	230.562	223.896	225.941	228.511	235.706	216.187	216.187	231.604
TVS	85.62	86.731	84.505	85.06	86.176	87.209	82.912	86.253	86.098
TPC	87.64	88.686	86.594	87.211	88.069	90.633	83.789	86.739	89.399
TSC	53.971	55.145	52.797	53.675	54.267	57.865	49.486	52.426	56.107
IstExp.Group									
Total	235.929	234.701	237.159	235.669	236.248	237.584	231.818	233.635	240.679
TVC	89.633	88.967	90.299	89.21	90.05	88.474	89.947	89.46	90.65
TPC	91.01	90.754	91.281	90.835	91.18	91.933	89.776	89.514	92.786
TSC	55.279	55.889	54.668	54.636	55.92	57.177	52.094	54.60	57.242
IIIndExp.Group									
Total	227.818	228.452	227.184	224.371	231.265	230.417	218.326	226.487	218.326
TVC	84.91	85.23	84.591	83.313	86.48	84.127	82.56	86.33	86.62
TPC	87.905	88.628	87.182	86.776	89.034	89.57	83.983	87.687	90.381
TSC	55.0	54.595	55.411	54.25	55.75	56.72	51.784	52.47	59.037
IIIIndExp.Group									
Total	217.940	227.625	208.255	218.769	217.112	239.118	198.419	216.132	218.092
TVS	82.31	85.997	78.625	82.628	81.995	89.062	76.23	82.97	81.0
TPC	83.99	86.675	81.319	84.002	83.993	90.396	77.608	82.95	85.03
TSC	51.632	54.952	48.211	52.132	51.224	59.697	44.581	50.208	52.041

APPENDIX II

RAW SCORES

Efficiency
 $A_i B_i C_i$

Aptitude

S1.no.TVC	TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total
1. 93.33	96.12	60.49	249.94	21.00	22	10	24	23	27	25	35	18	26	231
2. 79.90	100.30	66.30	246.5	20.00	16	14	25	21	29	14	26	19	24	198
3. 99.80	101.60	64.30	265.7	19.00	18	17	26	20	18	19	24	20	23	194
4. 88.24	93.08	53.67	234.99	12.00	14	16	16	31	12	8	10	21	21	151
5. 98.67	97.58	53.34	249.59	6.00	24	15	23	20	10	19	11	8	19	145
6. 94.67	104.34	61.92	260.93	19.00	17	14	16	20	14	13	10	7	23	153
7. 74.20	76.85	43.55	194.6	18.00	16	16	17	32	14	22	11	15	11	172
8. 77.75	68.20	47.65	193.6	18.00	15	22	20	13	21	25	22	17	17	190
10. 81.70	115.60	68.90	266.20	18.00	20	12	18	27	20	18	30	17	16	186
11. 96.70	88.70	68.30	253.70	19.00	84	16	10	26	20	21	22	19	14	191
12. 67.33	62.15	33.49	262.97	16.00	22	19	30	30	10	19	18	20	17	191
13. 98.47	92.56	52.16	203.13	17.00	15	21	26	29	18	17	15	20	19	197
14. 101.25	91.09	61.66	254.0	18.00	21	12	34	34	18	16	17	16	22	198
15. 82.00	71.47	46.92	200.39	15.00	21	13	13	12	12	14	14	19	13	146
16. 84.99	89.50	53.25	227.74	16.60	20	12	23	23	15	18	14	20	13	174
17. 75.25	80.25	65.99	221.49	27.00	33	29	37	30	28	36	32	21	38	311
18. 86.04	109.75	45.17	240.96	17.00	23	19	26	26	23	22	20	20	25	211
19. 90.	88.91	57.41	236.32	19.00	21	10	23	19	15	13	13	15	26	169
20. 97.75	96.60	52.67	241.08	24.00	35	29	27	33	29	22	31	30	32	292

APPENDIX II

RAW SCORES

Efficiency

A, B, C₁

Aptitude

S1.no.TVC	TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total
21. 85.25	93.67	56.91	235.83	16.00	17	20	21	22	13	14	17	18	23	181
22. 88.92	80.91	55.08	224.91	20.00	30	25	29	30	32	24	26	29	30	275
23. 89.67	93.57	57.33	240.57	20.00	21	12	11	21	29	17	18	18	26	193
24. 83.17	81.59	46.16	210.91	19.00	23	10	25	26	18	26	27	24	22	220
25. 84.67	80.58	49.50	214.75	21.00	20	19	18	16	24	25	26	13	20	212
26. 84.00	89.08	50.67	223.75	20.00	22	10	13	19	23	25	26	22	26	200
27. 87.17	80.25	52.66	220.08	19.00	18	13	20	21	22	23	20	19	25	200
28. 105.16	91.09	55.70	252.01	23.00	22	19	20	13	20	19	20	19	19	184
29. 98.07	104.34	43.55	246.56	19.00	20	23	15	23	19	24	23	20	22	195
30. 77.75	115.60	68.90	262.25	20.00	18	12	24	19	25	18	25	20	25	206
31. 81.70	91.09	56.91	229.70	23.00	17	9	28	18	22	20	24	18	26	205
32. 96.70	109.75	55.75	262.20	22.00	19	13	26	22	20	19	25	17	24	207
33. 98.38	102.78	68.75	269.89	22.00	23	24	19	18	24	27	30	31	29	247
34. 88.79	99.83	69.83	258.45	23.00	25	25	18	21	26	25	31	29	27	250
35. 100.62	102.82	72.90	276.34	24.00	22	23	16	19	23	22	33	30	28	240
36. 99.43	100.63	69.84	269.90	23.00	21	24	17	30	21	20	27	17	25	225
37. 98.73	102.56	70.83	272.12	19.00	17	25	18	23	22	23	28	29	22	226
38. 89.67	91.82	50.67	232.17	20.00	19	12	11	15	24	23	30	30	29	213
39. 87.88	99.67	65.93	253.48	17.00	22	9	13	19	25	22	27	26	24	204
40. 91.63	93.64	68.34	253.61	18.00	18	18	17	26	24	22	25	19	26	205

APPENDIX II

RAW SCORES

Efficiency $A_1 B_1 C_1$

S1.no.TVC	Aptitude										Total	$A_1 B_1 C_1$		
	1	2	3	4	5	6	7	8	9	10		TPC	TSC	
1. 90.60	17.0	18	19	21	18	25	18	20	17	30	247.89	98.64	58.60	
2. 88.60	15.0	10	8	22	19	23	19	25	16	29	258.03	99.13	70.30	
3. 96.08	10.0	21	17	34	22	20	20	14	23	19	251.12	102.42	52.62	
4. 72.95	24.0	17	19	13	16	22	16	13	11	15	212.15	72.25	66.95	
5. 70.95	13.0	14	18	20	23	10	17	13	11	15	186.00	69.05	46.00	
6. 70.10	20.0	19	20	15	19	22	20	18	17	18	191.20	77.45	43.65	
7. 73.45	21.0	17	20	19	21	13	22	13	17	25	191.10	66.65	51.00	
8. 67.10	29.0	17	18	20	28	17	22	17	18	15	180.65	68.90	44.65	
9. 74.95	22.0	24	18	19	22	20	19	22	21	16	247.85	121.65	51.25	
10. 70.95	20.0	16	17	12	24	26	25	20	19	16	258.45	106.90	80.60	
11. 90.68	22.0	17	18	13	20	19	26	19	18	15	285.78	121.30	73.80	
12. 98.70	23.0	19	20	12	29	18	20	20	19	18	289.40	120.80	69.70	
13. 85.80	20.0	21	14	9	28	19	19	25	24	15	276.40	119.80	70.80	
14. 77.92	11.0	12	16	15	23	10	15	15	16	16	262.59	82.75	41.92	
15. 63.12	18.0	18	17	8	20	16	21	15	17	20	183.09	61.64	61.64	
16. 86.50	23.0	17	15	20	21	11	18	17	14	11	231.24	85.88	59.16	
17. 89.71	23.0	30	19	39	45	33	33	33	31	31	238.04	93.25	55.08	
18. 90.01	23.0	32	19	40	37	32	19	23	24	25	246.51	98.98	57.58	
19. 71.67	17.0	25	19	28	26	23	22	20	22	23	189.27	76.58	41.02	
20. 75.67	17.0	25	19	28	21	23	22	20	28	21	194.66	72.83	46.16	

APPENDIX II
RAW SCORES

A₁ B₁ C₁

Efficiency

Sl.no.TVC	TPC	TSC	Total	Aptitude											
				1	2	3	4	5	6	7	8	9	10	Total	
21	82.49	77.66	44.50	204.65	17.0	25	19	28	27	23	22	20	22	23	216
22	76.24	90.57	46.66	213.47	18.0	25	11	30	25	23	22	20	20	23	217
23	87.92	68.93	55.01	211.86	18.0	15	17	15	16	30	20	21	25	25	192
24	85.23	88.18	54.83	228.24	20.0	12	16	21	23	24	22	13	17	24	183
25	85.91	77.91	47.43	211.45	18.0	21	13	25	26	30	14	28	22	24	221
26	64.01	81.00	54.00	199.01	24.0	25	10	27	28	23	24	19	21	22	223
27	91.41	84.25	53.58	229.24	22.0	22	13	24	25	17	26	18	26	23	216
28	97.74	93.24	54.09	245.07	21.0	22	12	18	15	16	22	20	23	24	193
29	91.83	81.36	59.91	233.10	20	22	24	23	15	26	27	30	23	20	230
30	89.67	84.37	49.86	223.90	23.0	19	15	27	30	26	27	18	21	23	229
31	87.33	80.63	50.33	218.29	24.0	18	23	29	31	28	29	19	22	26	249
32	82.08	94.44	58.74	235.26	23.0	14	25	29	14	28	22	23	30	28	236
33	106.77	99.00	69.25	274.42	24.0	21	14	14	13	17	20	20	24	25	192
34	86.25	100.00	59.99	246.16	26.0	20	28	16	12	18	30	32	14	26	222
35	100.00	98.63	68.75	267.55	22.0	19	26	28	16	27	28	30	28	27	251
36	102.32	96.83	70.94	270.09	25.0	18	24	24	17	23	30	29	28	25	240
37	99.86	100.67	82.68	283.21	25.0	20	28	26	20	19	28	30	24	24	244
38	79.83	88.63	50.67	219.13	24.0	22	26	24	18	19	27	29	22	24	235
39	80.47	89.33	49.83	210.63	25.0	23	24	22	19	21	26	30	23	25	238
40	82.63	90.67	48.67	221.94	24.0	22	24	21	19	20	26	28	26	25	235

APPENDIX II
RAW SCORES

A, B, C₁

Efficiency

Aptitude

Sl.no.TVC	TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total
1. 97.75	105.70	56.99	247.98	24.0	14	9	18	19	8	15	18	8	9	132
2. 69.15	64.80	47.35	219.73	22.0	19	13	21	16	14	13	9	19	16	162
3. 61.70	72.90	36.10	249.57	14.0	20	13	17	21	16	16	16	14	21	168
4. 71.55	72.20	42.00	256.87	22.0	19	19	18	16	16	9	14	15	18	166
5. 17.00	17.65	40.90	249.83	16.0	12	14	21	22	20	19	17	17	17	175
6. 80.16	78.17	54.83	252.74	20.0	26	8	35	32	9	21	22	18	22	213
7. 109.83	106.25	67.08	275.90	27.0	23	9	42	14	30	30	30	27	33	265
8. 87.01	108.83	68.67	229.91	23.0	28	19	36	42	32	32	35	33	18	298
9. 86.72	85.75	52.83	252.54	25.0	27	13	38	35	23	20	23	15	23	242
10. 98.33	93.30	56.33	188.80	18.0	24	10	35	27	30	24	16	17	35	226
11. 101.75	100.83	60.82	241.89	21.0	20	9	27	37	36	28	24	23	25	240
12. 75.16	72.83	41.17	242.51	17.0	22	9	28	26	23	22	22	28	23	220
13. 72.36	72.99	53.08	234.50	17.0	25	8	28	27	23	20	20	22	20	210
14. 74.33	59.16	39.75	218.00	17.0	25	9	26	27	25	21	20	19	33	212
15. 80.58	81.44	53.25	220.91	23.0	22	12	25	18	17	12	20	17	25	191
16. 99.50	89.23	52.84	213.66	24.0	25	13	30	31	26	27	19	20	26	241
17. 87.42	81.13	53.01	211.25	20.0	22	12	15	26	29	23	18	19	21	205
18. 86.74	95.42	65.50	219.82	18.0	17	13	24	21	25	23	20	20	15	196
19. 98.83	92.93	61.92	234.80	15.0	16	19	16	28	20	19	24	25	26	198
20. 93.34	89.09	57.34	247.67	23.0	27	10	19	23	24	15	18	20	19	198

APPENDIX II RAW SCORES

Efficiency	Sl.no.TVC	A ₁ B ₁ C ₁			Aptitude										Total
		TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total
	21. 88.24	-----	54.42	247.41	21.0	26	23	20	12	24	22	23	21	28	220
	22. 103.58	96.67	52.83	221.09	22.0	24	20	20	16	29	22	20	27	29	229
	23. 95.88	96.08	57.51	229.34	29.0	26	19	30	14	23	26	24	22	19	232
	24. 85.47	93.49	53.17	240.65	27.0	19	18	27	14	19	18	20	23	23	208
	25. 100.41	93.08	58.75	227.68	14.0	18	17	8	29	26	22	20	23	25	202
	26. 100.92	98.68	63.75	245.50	27.0	26	11	12	20	23	29	21	23	25	217
	27. 100.83	93.49	70.07	237.80	26.0	24	20	15	21	24	13	21	24	25	213
	28. 99.78	96.07	69.83	205.32	19.0	22	18	13	29	30	28	22	22	28	231
	29. 110.02	96.84	59.47	201.73	23.0	23	20	16	26	28	27	23	29	23	238
	30. 87.01	95.88	80.93	203.14	22.0	18	17	19	25	24	25	25	28	26	219
	31. 95.79	106.83	80.73	185.84	21.0	26	15	13	26	23	24	26	23	24	225
	32. 85.62	108.93	69.46	224.31	25.0	24	14	14	26	25	20	19	18	22	207
	33. 88.93	100.93	72.36	235.48	18.0	25	26	22	21	32	26	32	29	31	262
	34. 99.41	99.89	80.03	235.11	20.0	23	27	20	26	31	25	32	31	28	263
	35. 91.29	96.34	69.83	239.65	23.0	24	28	19	29	30	34	25	23	29	254
	36. 94.33	98.84	70.34	265.99	23.0	21	21	15	16	14	13	28	27	30	208
	37. 101.33	96.67	67.36	247.23	22.0	20	21	17	13	20	23	25	26	29	216
	38. 93.81	89.67	66.83	239.99	19.0	29	23	18	21	21	22	20	23	26	222
	39. 80.34	83.34	70.79	263.80	26.0	26	25	20	22	20	23	21	24	27	234
	40. 90.34	96.83	56.86	258.83	27.0	24	20	19	24	25	26	22	23	28	238

APPENDIX II RAW SCORES

Efficiency		A ₁ B ₁ C ₁				Aptitude									
S1.no.	TVC	T.C	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total
1	95.79	97.95	54.24	247.98	14.0	19	7	27	25	27	23	20	22	16	200
2.	85.62	88.20	45.91	219.73	17.0	24	8	28	13	17	16	14	16	15	168
3.	88.93	100.79	60.25	249.97	16.0	25	10	22	34	19	21	19	18	16	200
4.	99.41	99.21	58.25	256.87	19.0	19	8	36	32	18	18	22	16	16	204
5.	91.29	98.29	60.25	249.83	28.0	21	9	21	25	18	22	21	17	19	201
6.	94.33	98.25	60.16	252.74	14.0	15	11	30	27	13	10	8	8	24	160
7.	101.33	106.91	67.66	275.90	13.0	10	0	16	26	8	18	10	12	18	131
8.	93.81	80.83	55.27	229.91	14.0	24	16	29	34	29	19	23	30	33	261
9.	90.04	99.53	62.92	252.54	22.0	25	15	31	32	23	21	23	27	30	249
10.	75.30	68.00	45.50	188.80	25.0	25	15	30	34	29	25	24	27	28	262
11.	80.55	95.59	56.75	241.89	20.0	23	16	30	33	28	18	21	30	29	248
12.	91.84	88.58	62.09	244.51	20.0	21	12	31	25	26	17	21	25	28	236
13.	91.41	88.92	54.17	234.50	14.0	18	10	21	19	12	16	17	16	15	158
14.	78.99	50.11	53.90	218.00	15.0	19	13	25	25	16	12	17	24	20	186
15.	84.25	85.83	49.83	220.91	17.0	14	16	19	13	14	25	14	13	9	154
16.	90.91	75.17	47.58	213.66	20.0	24	5	29	29	23	25	23	26	20	224
17.	83.68	72.91	54.66	211.25	15.0	12	6	26	25	30	18	15	14	26	187
18.	89.00	81.92	48.90	219.82	15.0	14	8	24	20	32	18	16	24	20	191
19.	87.17	82.83	64.80	234.80	24.0	32	26	33	17	26	26	30	20	31	265
20.	90.83	100.08	54.76	247.67	23.0	30	25	25	19	24	24	26	22	28	256

APPENDIX II
RAW SCORES

$A_1 \bar{B}_1 \bar{C}_1$

Efficiency

Aptitude

S1.no.TVC	TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total	
21.	97.99	89.67	59.75	247.67	23.0	21	11	25	26	20	30	31	14	19	220
22.	87.91	81.84	51.34	243.41	17.0	14	16	19	13	14	25	14	13	9	154
23.	82.24	90.69	56.41	221.69	15.0	19	13	25	25	16	12	17	24	20	186
24.	94.49	90.65	55.50	229.34	16.0	21	13	22	26	17	15	18	22	21	191
25.	83.25	89.93	54.50	240.65	18.0	20	12	24	13	20	13	19	23	24	186
26.	97.00	85.75	42.75	227.68	17.0	15	16	23	20	21	15	20	19	21	181
27.	97.54	88.92	56.09	225.50	19.0	20	8	26	25	23	16	17	10	20	184
28.	75.17	79.57	50.58	237.08	20.0	22	24	18	18	23	25	26	19	32	227
29.	75.01	78.84	48.08	205.32	25.0	25	26	10	20	19	31	26	24	26	232
30.	72.72	84.75	45.65	202.43	23.0	22	24	19	22	19	17	23	20	27	216
31.	76.09	69.58	40.17	185.84	19.0	19	21	17	22	27	23	14	29	28	219
32.	85.84	83.81	54.66	224.31	22.0	18	24	25	24	23	22	23	21	26	228
33.	91.66	92.40	51.42	235.48	26.0	26	23	14	24	26	20	22	24	25	230
34.	86.68	91.68	56.75	235.11	23.0	23	22	16	24	24	25	25	26	27	235
35.	94.67	92.14	52.84	239.65	24.0	29	28	23	22	23	30	31	27	27	264
36.	97.82	100.34	67.83	265.99	25.0	23	20	20	26	31	29	28	28	26	256
37.	98.69	98.67	49.87	26.0	24	29	19	20	20	21	34	19	29	29	241
38.	89.80	77.33	52.33	239.99	23.0	24	26	18	22	22	22	33	30	28	248
39.	99.88	102.33	61.63	263.84	22.0	25	27	28	23	25	7	33	32	33	265
40.	100.33	100.67	57.83	258.83	20.0	21	29	32	33	28	26	23	29	19	260

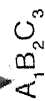
Efficiency		A ₁ B ₂ C ₂			Aptitude					Total				
S1.no.TVC	TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total
1	83.80	80.68	53.67	218.15	26.0	22	16	19	20	16	21	12	14	179
2	77.83	80.79	51.08	209.70	17.0	12	27	10	6	6	10	9	22	141
3	100.50	187.99	60.58	269.07	16.0	20	20	29	34	6	6	10	24	187
4	97.14	97.27	55.88	250.29	25.0	25	11	31	33	28	3	27	30	263
5	96.83	93.83	60.42	251.08	18.0	21	16	29	34	28	19	10	30	233
6	93.26	69.55	55.07	217.88	19.0	26	6	30	32	25	21	22	18	223
7	77.75	75.34	42.43	195.52	21.0	27	22	29	16	22	27	30	28	253
8	97.34	101.67	50.80	249.81	12.0	20	8	34	31	17	13	13	23	189
9	86.83	81.25	54.00	222.08	19.0	19	11	22	23	23	20	14	27	196
10	93.16	99.83	57.84	250.83	22.0	21	10	35	32	27	28	20	26	243
11	76.09	102.74	54.50	233.33	22.0	21	10	36	38	33	29	35	33	279
12	90.17	99.09	47.17	236.43	23.0	30	28	32	33	28	28	31	27	280
13	93.92	98.67	59.92	252.51	23.0	22	17	35	29	19	22	20	20	223
14	83.50	99.00	65.34	247.84	22.0	23	16	37	29	26	21	11	16	279
15	101.41	83.00	59.66	244.08	18.0	21	10	20	19	22	23	19	30	213
16	100.08	102.05	67.08	269.21	20.0	22	20	23	24	25	23	26	27	230
17	76.67	83.82	49.84	210.33	24.0	20	12	28	20	19	18	17	21	201
18	82.92	85.16	52.99	221.07	19.0	19	12	22	23	23	20	14	27	196
19	93.42	79.81	49.75	222.98	12.0	24	11	29	29	23	25	23	26	224
20	98.17	104.94	55.16	258.27	20.0	20	5	34	31	17	13	13	23	189

Efficiency

A₁ B₂ C₂

Aptitude

Sl.no.TVC	TPC	TSC	Total	1	2	3	4	5	6	7	8	9	10	Total	
21.	97.99	89.67	59.75	247.67	23.0	21	11	25	26	20	30	31	14	19	220
22.	87.91	81.84	51.34	247.41	17.0	14	16	19	13	14	25	14	13	9	154
23.	24.24	90.69	56.41	221.69	15.0	19	13	25	25	16	12	17	24	20	186
24.	94.49	90.65	55.50	229.34	16.0	21	13	22	26	17	15	18	22	21	191
25.	83.25	89.92	54.50	240.65	18.0	20	12	24	13	20	13	19	23	24	186
26.	97.00	85.75	42.75	227.68	17.0	15	16	23	20	21	15	20	19	21	181
27.	97.54	88.92	56.09	225.50	19.0	20	8	26	25	23	16	17	10	20	184
28.	75.17	79.57	50.58	237.8	20.0	22	24	18	18	23	25	26	19	32	227
29.	75.01	78.84	48.08	205.32	25.0	25	26	10	20	19	31	26	24	26	232
30.	72.72	84.75	45.65	202.43	23.0	22	24	19	22	19	17	23	20	27	216
31.	76.09	69.58	40.17	185.84	19.0	19	21	17	22	27	23	14	29	28	219
32.	85.84	83.81	54.66	224.31	22.0	18	24	25	24	23	22	23	21	26	228
33.	91.66	92.40	51.42	235.48	26.0	26	23	14	24	26	20	22	24	25	230
34.	86.68	91.68	56.75	235.11	23.0	23	22	16	24	24	25	25	26	27	235
35.	94.67	92.14	52.84	239.65	24.0	29	28	23	22	23	30	31	27	27	264
36.	97.82	100.34	67.83	265.99	25.0	23	20	20	26	31	29	28	28	26	256
37.	98.69	98.67	49.87	26.0	24	29	19	20	20	21	34	19	29	29	241
38.	89.83	97.83	52.33	239.99	23.0	24	26	18	22	22	22	33	30	23	248
39.	99.88	102.33	61.63	263.84	22.0	25	27	28	23	25	27	33	32	23	263
40.	100.33	100.67	57.83	258.83	20.0	21	29	32	33	28	26	23	29	19	260



Sl. No.	TVC	TPC	TSC	Efficiency		Aptitude										Total
				Total		1	2	3	4	5	6	7	8	9	10	
1	89.89	88.17	59.88	237.94		20.1	25	16	30	34	29	23	26	27	28	258
2	90.09	93.76	55.91	239.76		22.0	26	30	16	33	34	29	21	24	34	269
3	93.79	85.32	49.09	228.20		22.0	27	14	29	32	28	21	22	27	31	253
4	85.33	86.38	49.75	221.46		17.0	25	14	31	27	24	20	19	24	25	226
5	108.00	74.75	42.10	224.85		15.0	17	22	24	17	14	17	13	22	15	176
6	88.21	87.90	51.33	227.44		26.0	22	17	31	29	28	17	26	26	26	248
7	93.06	94.49	58.42	245.97		24.0	26	16	38	34	28	22	24	28	32	272
8	87.20	96.95	43.33	239.72		27.0	25	25	15	30	34	29	25	24	28	262
9	102.78	94.34	52.34	249.88		19.0	26	18	37	25	32	25	26	36	32	276
10	89.42	89.51	47.25	234.85		24.0	25	16	35	35	32	21	23	28	34	273
11	92.42	80.58	48.84	221.84		14.0	15	16	30	21	19	18	16	25	15	189
12	91.50	86.75	53.25	231.50		19.0	27	22	32	36	21	25	20	29	27	258
13	107.50	93.08	61.83	262.41		17.0	20	10	17	18	20	21	22	23	24	192
14	83.83	81.83	55.00	420.66		22.0	19	12	13	26	24	20	27	30	28	221
15	94.50	84.75	53.42	232.67		21.0	20	10	24	26	23	19	20	18	28	209
16	74.17	63.68	40.00	177.85		22.0	27	12	33	29	30	17	18	22	18	228
17	68.75	70.42	14.84	181.01		22.0	27	12	35	29	30	17	18	22	18	230
18	33.50	69.42	41.67	144.59		22.0	29	12	35	37	30	17	20	22	18	240
19	77.84	66.54	46.66	190.84		22.0	32	12	33	29	30	21	18	22	18	237
20	72.33	66.39	38.38	177.50		22.0	28	12	30	25	20	18	16	22	18	211

A₁B₂C₃

Sl. No.	TVC	TPC	TSC	Efficiency			A ₁ D ₂ O ₃									
				Total	1	2	3	4	5	6	7	8	9	10	Total	
21	68.25	72.25	42.09	182.59	14.0	25	9	28	27	20	22	20	22	23	210	
22	69.17	77.66	42.75	189.58	17.0	25	9	30	27	23	22	22	28	20	223	
23	69.57	68.25	43.33	181.25	17.0	25	9	26	27	23	22	20	28	35	232	
24	77.32	84.92	52.34	220.88	25.0	24	24	21	22	16	18	27	20	24	221	
25	75.24	84.00	47.25	208.33	19.0	19	23	17	29	28	27	26	22	30	240	
26	62.25	83.58	50.41	196.24	29.0	28	30	14	23	18	23	24	19	27	235	
27	73.92	81.65	48.16	263.13	15.0	27	29	14	22	22	22	27	18	26	222	
28	93.50	82.60	49.92	185.24	22.0	20	24	24	20	25	22	21	18	31	227	
29	75.19	83.26	46.58	208.78	27.0	22	14	15	26	29	28	28	26	27	242	
30	95.68	80.55	56.75	233.88	28.0	15	18	15	25	26	24	27	24	30	237	
31	96.42	80.17	59.08	233.67	30.0	22	21	14	20	21	21	20	26	28	223	
32	94.42	89.50	57.33	241.25	25.0	24	20	19	18	17	20	21	23	24	211	
33	84.08	86.01	48.84	218.93	24.0	24	24	15	25	25	29	23	25	22	236	
34	90.50	82.32	56.9	229.70	26.0	24	25	18	27	28	29	30	29	29	265	
35	78.08	88.83	47.92	204.83	30.0	31	21	16	15	24	27	28	29	29	250	
36	86.36	89.63	52.63	228.62	29.0	23	24	26	27	23	29	19	20	28	248	
37	89.37	87.83	50.67	227.87	28.0	30	30	31	26	24	27	18	22	29	266	
38	80.89	90.67	54.33	225.89	30.0	32	29	21	25	26	27	19	21	26	256	
39	83.62	88.63	48.63	253.15	29.0	30	23	23	24	27	22	17	21	30	246	
40	79.83	80.83	47.67	267.89	28.0	26	25	24	23	28	23	16	27	21	241	

A₂B₁C₁

Aptitude

Efficiency

Sl. No.	IVC	TPC	TSC	Efficiency Total	1	2	3	4	5	6	7	8	9	10	Total
1	104.83	106.48	47.17	258.08	14.0	26	18	39	34	21	30	14	23	20	239
2	115.17	110.33	67.83	293.33	19.0	23	17	35	33	21	32	10	20	23	233
3	117.08	110.08	72.33	299.49	29.0	24	13	26	32	34	28	37	27	42	292
4	95.93	100.62	51.92	248.47	23.0	24	15	23	20	21	29	17	21	22	215
5	96.54	93.50	53.42	143.46	16.0	15	12	23	27	13	18	22	24	19	189
6	84.34	88.91	42.33	215.18	25.0	17	13	29	16	19	30	13	19	19	200
7	89.12	89.91	40.92	219.95	14.0	18	9	16	24	26	18	20	24	19	188
8	98.12	105.92	56.83	260.87	28.0	24	8	21	32	29	20	23	22	33	240
9	99.81	97.42	55.92	253.15	26.0	24	8	26	35	34	23	25	24	33	258
10	110.56	96.50	60.83	267.89	14.0	22	17	27	22	16	16	17	17	19	187
11	96.18	89.60	58.67	244.45	15.0	16	12	20	18	13	18	13	17	15	157
12	101.12	95.50	61.41	258.03	19.0	17	11	21	23	17	19	21	14	20	182
13	95.70	90.00	56.33	242.03	17.0	18	12	17	20	22	19	15	17	18	175
14	72.58	82.10	41.25	195.93	25.0	25	19	31	29	24	23	24	22	33	255
15	8.08	70.92	44.91	196.51	19.0	23	7	18	38	27	17	34	17	21	221
16	84.91	66.17	42.06	193.14	18.0	27	14	29	21	23	29	27	25	26	239
17	84.17	69.50	36.34	190.01	15.0	16	8	13	10	15	20	14	13	19	146
18	96.83	99.34	64.50	260.67	20.0	33	10	33	21	36	18	24	22	18	235
19	84.57	87.83	50.68	223.08	16.0	28	13	25	36	21	35	23	31	28	256
20	79.52	80.19	42.67	202.38	17.0	25	16	28	28	26	21	17	17	27	222

$A_2B_1C_1$ (Continued)

S1. TVC	TPC	TSC	Efficiency		Aptitude										Total	
			Total	1	2	3	4	5	6	7	8	9	10			
No.																
21	84.17	69.50	36.34	190.01	15.0	16	8	16	15	10	20	14	13	19	146	
22	96.83	99.34	64.50	260.67	20.0	33	10	33	36	21	18	24	22	18	235	
23	77.50	84.17	45.25	206.92	14.0	21	8	32	17	21	20	21	18	18	190	
24	63.75	75.59	48.25	187.59	10.0	10	6	11	13	10	6	8	8	10	192	
25	70.17	71.68	52.24	194.59	10.0	12	7	10	14	9	9	10	3	9	193	
26	92.34	99.42	59.50	251.26	15.0	16	9	20	13	14	19	20	18	19	163	
27	91.75	73.59	45.57	210.91	29.0	28	28	19	26	24	23	21	17	25	239	
28	76.50	71.09	49.92	197.51	20.0	21	22	15	16	17	24	25	26	27	213	
29	88.33	92.36	46.58	227.27	26.0	20	18	17	19	21	20	22	23	24	210	
30	73.12	69.17	46.17	188.46	20.0	17	15	16	19	22	23	24	22	22	200	
31	86.59	89.33	44.33	220.25	24.0	24	25	28	23	21	31	29	26	27	258	
32	87.66	74.75	49.42	211.83	22.0	15	17	19	22	21	24	27	26	22	215	
33	84.33	99.86	60.73	244.92	23.0	19	18	23	24	26	27	21	28	31	238	
34	90.73	100.34	70.83	261.90	24.0	20	20	21	22	25	22	22	27	29	234	
35	82.68	89.67	59.67	241.62	26.0	26	18	19	27	24	22	23	26	23	229	
36	93.56	100.02	48.34	214.92	27.0	27	18	26	20	22	23	24	18	25	237	
37	100.23	100.67	49.67	250.47	20.0	22	21	21	23	23	17	26	18	24	213	
38	96.85	99.87	57.68	254.4	19.0	24	21	21	32	20	18	29	17	28	220	
39	87.98	100.23	49.80	238.01	23.0	25	24	20	20	14	18	27	30	22	228	
40	84.64	90.005	50.66	226.20	10.0	20	20	20	15	20	20	20	20	20	200	

$K_2B_1C_2$

S1. No.	Efficiency			Total	Aptitude										Total
	TVC	TPC	TSC		1	2	3	4	5	6	7	8	9	10	
1	117.17	107.15	72.58	296.90	15.0	26	13	36	39	17	30	14	23	20	235
2	95.29	93.35	42.58	231.22	24.0	24	12	34	35	25	24	24	21	26	249
3	92.64	86.87	48.97	228.08	17.0	13	9	35	32	15	16	17	18	17	189
4	69.58	82.16	46.42	198.16	23.0	23	14	23	36	27	23	24	21	16	226
5	68.25	65.17	43.17	176.59	24.0	29	28	21	41	27	18	30	30	38	281
6	69.75	119.92	41.16	229.83	31.0	33	10	34	29	22	30	17	20	30	268
7	79.26	74.67	47.83	201.76	14.0	17	9	19	24	16	15	18	20	21	158
8	102.83	107.08	63.49	273.40	14.0	16	18	18	16	9	24	30	14	12	159
9	87.98	78.25	61.59	219.76	12.0	11	16	16	13	14	23	11	21	23	163
10	84.60	81.32	52.75	224.83	13.0	16	14	16	16	10	14	18	17	10	131
11	96.18	90.41	61.08	236.49	18.0	16	11	13	16	29	27	24	23	23	200
12	101.12	74.67	47.83	201.76	14.0	17	9	19	9	9	15	18	20	21	158
13	95.70	107.08	63.49	273.40	14.0	16	18	18	10	24	24	20	14	12	159
14	72.58	78.25	61.59	212.76	12.0	11	16	16	14	16	23	11	21	23	163
15	81.08	81.32	52.75	224.83	13.0	16	14	16	10	13	14	18	17	10	131
16	85.00	90.41	61.08	236.49	18.0	16	11	13	29	16	27	24	23	23	200
17	84.91	91.59	61.24	237.74	130	28	12	30	33	18	18	20	17	18	207
18	92.59	93.59	54.42	240.60	13.0	20	12	28	30	16	16	20	20	19	194
19	92.58	76.83	54.59	224.00	27.0	22	20	26	27	23	20	26	28	23	242
20	86.41	88.59	54.66	229.66	23.0	17	18	19	20	26	28	24	22	30	227

(Continued)

A₂B₁C₁ (Continued)

S1. No.	TVC	TPC	TSC	Efficiency Total	Aptitude										Total
					1	2	3	4	5	6	7	8	9	10	
21	80.51	70.92	45.67	197.10	25.0	26	22	23	18	27	18	31	27	26	243
22	92.97	68.67	55.08	194.92	29.0	28	27	20	25	19	18	25	26	28	237
23	86.08	70.67	42.33	186.08	23.0	28	29	14	13	15	21	20	24	23	210
24	87.63	90.08	49.58	230.90	24.0	24	23	21	22	23	20	18	19	32	226
25	85.83	88.44	51.99	211.85	26.0	20	24	26	24	27	19	24	23	28	241
26	77.34	83.66	54.49	215.49	28.0	23	18	19	23	24	25	27	25	26	238
27	77.07	79.57	43.90	201.14	18.0	16	15	14	16	20	30	16	16	18	169
28	74.08	75.42	41.58	191.08	20.0	16	19	21	19	18	13	20	22	24	192
29	71.76	74.01	52.67	198.44	28.0	30	26	20	25	24	23	20	20	21	237
30	66.08	73.00	43.08	182.16	29.0	30	30	21	25	27	23	28	27	19	159
31	75.41	83.09	40.25	198.75	25.0	23	24	20	20	18	19	22	26	25	222
32	58.03	48.00	34.33	140.36	29.0	27	22	13	17	18	17	19	26	24	212
33	60.09	72.58	38.33	171.0	22.0	23	24	18	19	26	27	26	25	30	240
34	79.41	86.43	59.32	225.16	19.0	20	22	23	23	22	29	28	30	31	247
35	83.09	86.13	53.58	233.40	24.0	23	19	20	25	24	26	27	32	31	251
36	81.75	88.06	54.42	224.23	23.0	27	25	19	18	27	26	29	22	23	239
37	92.97	75.75	58.24	226.96	22.0	20	23	21	22	20	27	26	25	24	230
38	86.08	85.33	53.00	224.41	21.0	22	24	23	19	18	29	27	23	24	230
39	77.63	90.89	56.78	235.30	22.0	24	29	22	23	17	28	24	19	26	234
40	85.83	100.34	49.86	236.03	23.0	20	28	19	26	27	30	23	21	26	243

$A_2B_1C_3$

S1. No.	TVC	TPC	TSC	Efficiency		Aptitude										Total
				Total	1	2	3	4	5	6	7	8	9	10		
1	67.83	69.50	42.92	180.25	18	22	16	26	23	17	21	22	18	22	196	
2	67.83	69.50	42.92	186.25	18	22	16	26	17	24	21	22	18	22	196	
3	88.83	97.91	65.41	225.25	18	19	15	21	33	21	14	19	17	17	184	
4	77.25	86.43	58.50	222.18	14	15	19	10	13	14	16	15	13	12	141	
5	80.42	93.84	47.92	222.18	28	23	22	17	18	25	23	24	29	26	235	
6	84.50	79.84	48.58	212.92	26	24	17	18	23	31	21	21	21	29	231	
7	86.67	86.60	51.17	224.44	25	15	15	14	20	26	25	26	23	28	217	
8	79.25	85.57	51.76	216.58	26	20	21	22	23	24	29	33	23	19	237	
9	87.03	76.51	46.59	210.13	17	20	23	21	22	24	26	32	25	27	244	
10	68.25	71.75	55.66	195.06	17	27	18	16	19	23	24	30	21	29	230	
11	77.08	75.76	44.75	195.59	23	20	19	18	24	31	30	28	27	26	246	
12	75.84	80.66	42.06	199.16	24	25	26	33	28	29	31	24	23	27	270	
13	72.33	67.43	41.41	181.17	26	27	26	15	24	19	20	25	27	29	238	
14	63.17	60.03	31.25	154.45	21	22	25	16	18	17	25	24	20	29	215	
15	69.32	65.92	32.50	167.74	20	22	27	17	23	16	24	23	28	26	226	
16	87.50	86.24	57.83	231.57	25	23	24	20	13	14	26	29	30	31	239	
17	95.17	92.08	45.16	232.41	22	21	28	21	27	28	20	26	19	26	231	
18	87.83	91.24	49.92	228.99	27	18	21	20	25	23	20	27	22	27	226	
19	81.42	88.44	51.99	221.85	26	20	17	26	24	27	19	24	23	28	241	
20	86.00	120.17	50.92	257.09	29	23	24	20	22	26	24	25	20	30	241	

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$A_2B_1C_3$ (Continued)

S1. No.	TVC	TPC	TSC	Efficiency		Aptitude									
				Total	1	2	3	4	5	6	7	8	9	10	Total
21	80.95	80.08	39.62	200.65	19	20	22	22	24	23	16	18	24	23	210
22	68.29	70.75	41.69	180.69	25	26	21	13	18	14	15	20	20	20	191
23	69.33	68.91	35.26	173.50	26	24	20	22	23	20	15	14	15	19	201
24	80.42	64.67	42.50	187.59	17	16	23	20	17	21	19	19	15	19	180
25	75.68	68.87	37.16	181.71	17	17	17	21	18	22	12	20	14	22	180
26	67.33	62.83	29.59	159.75	18	19	17	20	19	23	14	21	15	23	190
27	60.36	85.67	54.50	198.53	26	23	18	21	21	19	30	28	25	21	240
28	81.33	82.64	43.91	207.93	23	21	20	24	25	20	20	19	18	19	211
29	62.76	62.83	40.66	166.25	22	15	22	13	27	24	21	20	20	20	196
30	54.08	64.25	38.25	156.58	19	16	14	18	20	30	24	21	22	31	218
31	58.33	65.34	33.50	157.17	26	24	17	19	13	20	21	25	24	19	215
32	75.92	75.04	46.91	197.87	19	20	22	22	23	24	25	22	23	20	219
33	76.68	68.59	37.92	183.19	24	25	24	19	18	21	22	23	24	26	222
34	63.61	84.18	39.17	186.96	26	22	22	23	24	20	21	21	19	24	221
35	42.66	55.92	43.09	141.67	28	18	19	20	21	27	23	22	20	20	218
36	70.75	62.18	40.50	173.43	23	21	25	23	17	18	27	25	24	23	223
37	107.33	79.57	47.57	234.47	27	20	23	22	21	20	27	26	25	25	235
38	92.16	80.78	46.68	219.02	29	20	24	18	18	15	21	20	19	19	193
39	84.88	89.51	44.69	219.08	25	24	29	23	19	18	21	22	23	23	221
40	92.77	86.25	42.83	221.85	23	22	28	17	21	20	25	24	21	22	216

$A_2B_2C_1$

S1. TVC No.	TVC	TPC	TSC	Efficiency		Aptitude										Total
				Total	i	1	2	3	4	5	6	7	8	9	10	
1	108.17	108.17	66.83	283.17	26.0	30	30	13	36	30	28	19	23	24	18	247
2	98.76	88.70	47.50	234.96	27.0	15	15	15	23	30	23	11	20	23	12	149
3	85.87	81.50	42.83	210.20	28.0	25	25	12	20	30	26	20	24	24	34	243
4	79.34	82.25	39.25	200.84	26.0	29	29	11	25	27	23	32	18	25	29	245
5	85.28	89.25	48.66	223.19	20.0	18	18	12	21	30	16	22	22	27	17	205
6	103.29	92.96	60.50	256.75	26.0	21	21	10	26	21	17	12	18	18	18	187
7	90.37	89.83	56.58	236.78	18.0	16	16	2	22	16	14	18	18	19	19	168
8	115.17	110.33	67.83	293.33	19.0	23	23	17	35	33	21	32	10	20	23	233
9	117.08	110.08	72.33	299.49	29.0	24	24	13	26	32	34	28	35	27	42	290
10	95.93	100.62	51.92	248.47	23.0	24	24	15	23	20	21	29	17	21	22	215
11	100.83	93.25	59.10	253.18	15.0	34	34	10	32	35	23	29	28	33	28	269
12	75.59	72.59	55.33	203.51	20.0	25	25	10	30	30	26	27	27	26	30	251
13	83.83	82.40	48.75	214.98	19.0	18	18	13	22	19	23	22	20	16	10	182
14	60.52	83.74	57.75	202.01	25.0	15	15	17	26	22	21	25	19	19	17	206
15	85.60	81.66	53.17	220.43	24.0	15	15	10	25	20	21	25	18	18	19	195
16	72.47	55.07	46.25	173.79	15.0	26	26	29	25	27	23	28	24	20	34	251
17	77.86	112.83	69.01	235.74	19.0	24	24	17	20	24	18	27	14	19	18	200
18	90.17	112.66	58.33	209.73	28.0	28	28	8	37	41	36	19	31	25	40	293
19	86.08	92.67	60.49	230.28	28.0	28	28	2	37	41	36	22	30	28	40	298
20	83.17	94.66	56.83	190.51	33.0	31	31	12	36	40	24	24	25	23	30	278

A₂B₂C₁

Efficiency Total

Aptitude

S1. No.	TVC	TPC	TSC	Efficiency Total	i	2	3	4	5	6	7	8	9	10	Total
21	81.66	87.75	50.58	239.38	27.0	30	11	31	39	28	30	29	35	24	284
22	97.33	107.49	64.25	231.18	26.0	23	21	31	33	27	25	25	23	32	266
23	92.83	93.08	49.83	227.65	35.0	25	14	29	40	25	23	12	23	26	253
24	99.50	95.49	59.92	257.43	23.0	25	33	34	42	30	29	23	23	35	298
25	94.33	89.24	56.75	254.04	19.0	21	8	27	29	22	21	17	18	20	202
26	99.50	106.17	99/85	305.52	21.0	30	7	29	30	26	17	21	27	33	241
27	107.47	108.00	60.46	273.93	31.0	28	20	44	44	38	25	29	22	44	325
28	106.80	105.09	66.26	278.15	30.0	27	20	40	38	30	23	28	20	40	293
29	83.17	94.66	56.83	234.66	33.0	31	12	36	40	24	24	25	23	30	278
30	81.60	87.75	50.58	219.99	27.0	30	11	31	39	28	30	29	35	24	284
31	97.33	107.49	64.25	269.67	26.0	23	21	31	33	27	25	23	25	32	266
32	92.83	93.08	49.88	235.74	35.0	25	14	29	40	25	23	13	23	26	253
33	80.01	2.99	46.75	209.75	20.0	22	18	16	17	18	19	23	30	22	195
34	94.08	82.95	53.25	230.19	20.0	18	19	20	15	26	23	22	17	23	203
35	74.66	72.26	43.59	239.61	23.0	21	14	20	26	28	26	17	24	23	222
36	83.88	89.67	65.83	280.56	22.0	19	18	26	26	30	23	26	30	29	249
37	93.67	86.88	50.63	273.91	30.0	19	27	18	24	29	20	27	31	24	249
38	97.26	89.96	49.86	253.92	31.0	21	19	18	25	25	20	28	32	26	245
39	93.93	99.83	63.67	237.17	32.0	22	27	24	25	25	22	29	30	23	258
40	87.98	98.39	67.67	244.33	31.0	30	29	21	20	27	28	25	23	24	259

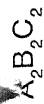


Sl. No.	TVC	TPC	TSC	Efficiency		Aptitude					Total
				Total		1	2	3	4	5	
1	100.30	120.01	67.80	288.11		16.0	30	20	19	20	230
2	99.50	95.49	59.92	254.91		23.0	26	33	34	42	298
3	94.33	89.24	56.75	240.32		19.0	21	18	27	29	202
4	99.58	106.17	59.25	265.00		21.0	30	17	29	30	241
5	107.67	106.00	60.26	273.93		31.0	28	20	44	44	325
6	90.17	112.66	58.53	261.16		28.0	28	18	37	41	293
7	86.08	92.67	66.49	245.24		28.0	28	18	37	41	298
8	75.59	72.59	55.30	203.48		20.0	25	10	30	30	251
9	60.52	83.74	57.75	202.01		15.0	26	29	25	27	213
10	83.83	82.40	48.75	214.98		15.0	26	29	25	27	251
11	85.60	81.66	53.17	220.43		25.0	15	17	26	22	206
12	77.33	88.33	46.17	212.83		24.0	15	10	25	20	195
13	100.83	93.10	53.25	247.18		15.0	34	10	32	35	269
14	72.34	72.76	44.67	189.77		22.0	21	13	17	13	201
15	74.91	88.58	47.33	210.82		20.0	24	19	18	21	207
16	71.33	78.49	42.99	192.81		24.0	26	27	18	17	207
17	55.49	81.00	36.67	173.16		20.0	20	22	18	20	187
18	80.07	67.99	50.08	198.14		19.0	19	24	26	16	194
19	65.08	77.29	54.47	187.84		20.0	22	23	28	16	188
20	77.76	85.25	47.67	210.68		23.0	24	19	12	15	215

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$K_2B_2C_2$

S1. No.	TVC	TPC	TSC	Efficiency		Aptitude										Total
				Total	1	2	3	4	5	6	7	8	9	10		
21	93.83	99.96	59.32	251.11	22.0	19	30	18	16	28	18	23	23	26	223	
22	89.67	98.47	82.32	270.46	24.0	28	26	20	18	27	20	27	24	29	243	
23	102.67	108.34	80.62	291.63	25.0	29	25	23	19	26	16	29	16	28	238	
24	100.25	92.49	56.58	249.32	13.0	22	10	23	17	22	14	13	20	19	163	
25	86.22	62.50	88.50	237.22	20.0	25	28	27	28	31	27	27	21	33	271	
26	72.47	96.25	75.07	243.79	24.0	20	12	20	22	21	24	19	20	20	198	
27	62.83	72.42	46.83	182.07	21.0	19	18	20	15	18	17	20	15	28	201	
28	86.92	78.49	44.42	209.83	22.0	23	24	20	18	20	20	20	24	19	210	
29	63.17	81.72	35.16	180.65	18.0	19	23	20	15	18	14	21	23	21	192	
30	73.50	81.79	63.35	218.64	27.0	26	19	20	13	26	24	21	23	28	227	
31	79.22	71.62	54.08	204.92	14.0	19	13	16	19	23	25	27	28	23	207	
32	85.09	91.40	51.89	228.38	19.0	24	16	24	25	22	4	19	20	25	215	
33	78.33	74.33	53.92	206.58	27.0	23	14	20	27	30	21	23	22	27	234	
34	75.99	76.33	43.42	195.74	27.0	17	17	18	22	24	28	24	19	21	217	
35	60.40	66.09	49.33	175.82	20.0	19	23	15	14	19	16	15	20	20	181	
36	86.34	88.37	60.33	235.04	26.0	26	25	24	23	21	22	27	22	20	236	
37	82.42	80.46	64.86	227.74	27.0	23	26	27	20	23	24	28	25	27	250	
38	80.63	90.38	54.33	225.34	22.0	24	20	18	21	23	22	15	24	23	212	
39	91.83	89.67	52.78	234.28	20.0	25	21	19	20	24	23	16	22	24	214	
40	76.83	82.33	49.83	208.99	20.0	21	21	21	22	25	20	17	23	25	215	



S1. No.	TVC	TPC	TSC	Efficiency		Aptitude									
				Total	1	2	3	4	5	6	7	8	9	10	Total
1	96.93	83.08	66.42	240.43	20.0	21	19	18	19	19	16	19	13	20	172
2	86.22	88.50	62.50	237.22	24.0	25	18	27	28	31	27	27	21	33	251
3	77.33	88.83	46.17	212.33	20.0	20	12	20	22	21	24	19	20	20	198
4	83.40	90.09	56.70	230.19	15.0	19	20	27	27	22	26	13	14	19	202
5	60.52	100.76	78.33	239.61	20.0	23	20	27	23	30	20	20	24	27	234
6	80.22	120.33	80.81	280.56	20.0	18	22	25	26	19	18	23	23	32	226
7	107.33	106.33	60.25	273.91	26.0	22	10	30	35	30	31	34	26	40	284
8	97.26	99.33	57.33	253.92	26.0	20	10	30	33	28	22	30	23	30	252
9	82.67	101.91	52.59	237.17	19.0	14	17	19	17	22	11	20	19	12	170
10	93.75	95.91	54.67	244.33	27.0	21	15	21	23	20	15	22	23	17	194
11	95.83	81.42	52.92	230.17	23.0	24	19	23	29	19	20	12	24	20	203
12	100.25	92.49	56.58	249.32	13.0	22	10	28	17	22	14	13	20	19	163
13	107.33	106.33	60.25	273.91	26.0	20	10	30	35	30	31	34	26	44	288
14	97.26	99.33	57.33	253.92	26.0	14	10	30	33	28	22	30	23	30	252
15	82.67	101.91	53.59	238.17	19.0	21	17	19	17	22	11	20	19	12	170
16	93.75	95.91	54.67	244.33	27.0	24	15	21	23	20	15	22	23	17	194
17	95.83	81.42	52.92	230.17	23.0	--	19	23	29	14	20	12	24	20	198
18	100.25	94.49	56.58	249.32	13.0	22	10	23	17	22	14	13	20	19	163
19	108.62	103.64	72.92	285.18	26.0	20	21	16	20	30	19	22	21	22	217
20	88.93	101.82	67.83	258.58	23.0	27	29	17	25	26	16	21	19	24	227

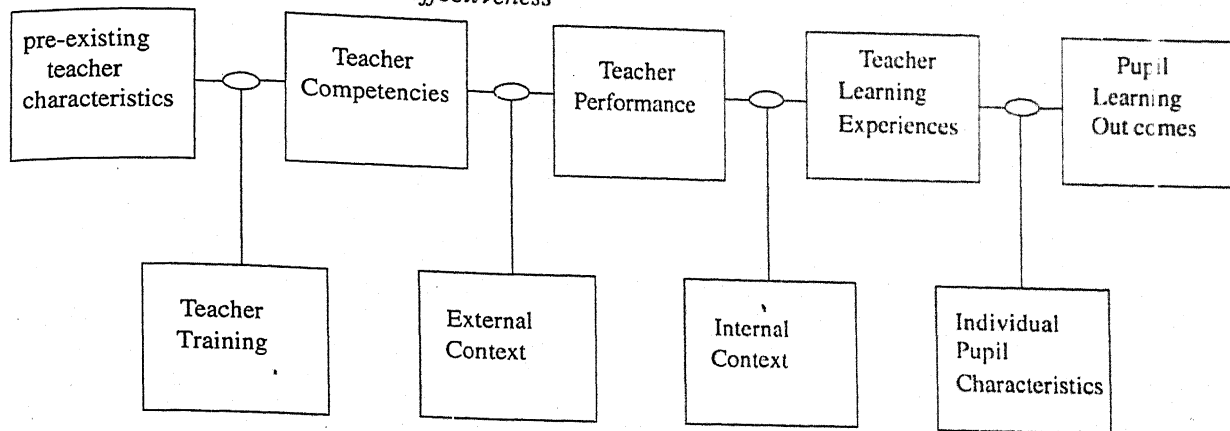
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$A_2B_2C_3$ (Continued)

S1. No.	TVC	TPC	TSC	Efficiency		Aptitude									
				Total	1	2	3	4	5	6	7	8	9	10	Total
21	74.53	62.80	49.41	186.74	23.0	20	18	20	20	27	20	25	24	23	220
22	82.50	62.36	46.24	191.10	28.0	27	15	21	14	23	21	22	20	26	217
23	70.37	80.68	45.67	196.72	29.0	20	20	18	12	24	22	19	29	24	217
24	77.17	80.67	57.83	215.67	15.0	18	14	15	23	33	34	20	21	19	212
25	85.16	91.95	56.33	23.44	21.0	22	18	19	16	25	34	29	30	22	226
26	88.66	90.75	58.01	237.42	26.0	24	17	23	24	24	23	21	24	25	231
27	85.09	91.40	51.89	228.38	19.0	27	16	24	25	22	21	19	20	25	218
28	85.11	78.50	55.33	218.94	23.0	23	21	19	26	21	18	24	19	20	214
29	93.17	94.75	51.91	239.83	30.0	29	13	21	23	31	24	25	28	26	250
30	76.04	84.84	50.84	211.72	14.0	15	12	21	24	29	23	27	31	27	223
31	77.67	77.92	49.25	204.84	24.0	20	17	19	25	29	27	21	22	18	222
32	69.25	58.49	44.30	172.04	28.0	21	20	21	26	30	25	19	21	17	228
33	78.57	63.58	44.42	186.57	26.0	19	20	17	21	22	29	18	23	25	220
34	66.57	74.75	43.88	185.20	22.0	18	18	16	20	23	19	17	24	26	203
35	65.08	68.89	38.25	172.22	19.0	18	20	17	16	21	20	16	24	19	190
36	70.89	92.63	54.63	218.15	18.0	23	22	28	29	26	23	19	23	30	241
37	80.19	82.63	55.66	218.48	22.0	20	24	20	22	21	23	27	28	31	238
38	79.83	89.34	59.83	229.00	23.0	21	23	20	23	25	22	26	29	29	241
39	87.98	100.02	60.06	248.06	24.0	26	23	21	24	26	25	22	25	28	244
40	88.67	98.34	49.83	236.84	25.0	23	27	22	23	24	24	23	26	27	244

TEACHER EFFECTIVENESS

FIGURE 1- *Structure of teacher effectiveness*



skill; the wisdom teacher shows in making such changes may well be a major determiner of how effective the teacher is. This important element in teacher performance has been almost completely ignored in process-product studies. Both of these limitations apply with equal force to procedures currently used to recognize effective teachers. Future progress in research in teacher effectiveness and in the accuracy of decisions about teacher effectiveness will be slight unless the process-product model is replaced by something sensitive to both of these elements.

A Strategy for Future Research:- If future research is to transcend the limitations of the process-product design, a new strategy must be adopted. The remainder of this article will describe such a strategy, one that incorporates suggestions from many sources—too many to be acknowledged here. Three major departures from Mitzel's model are incorporated in it. First, a finer breakdown of variables and a more detailed conceptualization of the structure of teachers' effectiveness will be proposed. Second, the basic unit of teacher behavior studied will be redefined: instead of attempting to describe effective teacher performance in terms of single behaviors, a larger unit called a teaching "strategy" or "model" will be proposed. And, finally, alternative to the simple process-product design called "triangular design" will be described.

All three of these proposals are designed to achieve the main end: an increase in the power of research on teacher effectiveness, that is, in the likelihood that studies will detect relationships that really exist. Such an increase should accelerate the rate of growth of knowledge of the nature of effective teaching. Such knowledge is desperately needed by policy makers in their efforts to improve public education by increasing the effectiveness of teachers while it is being developed. However, it is hoped that adoption of the new model will in itself help these policy makers by clarifying some of the issues with which they must deal.

There structure of effectiveness:- Figure I shows in schematic form nine important types of variables involved in the definition of teacher effectiveness proposed as a basis for planning future research, in the research itself, and in decisions about teacher effectiveness.

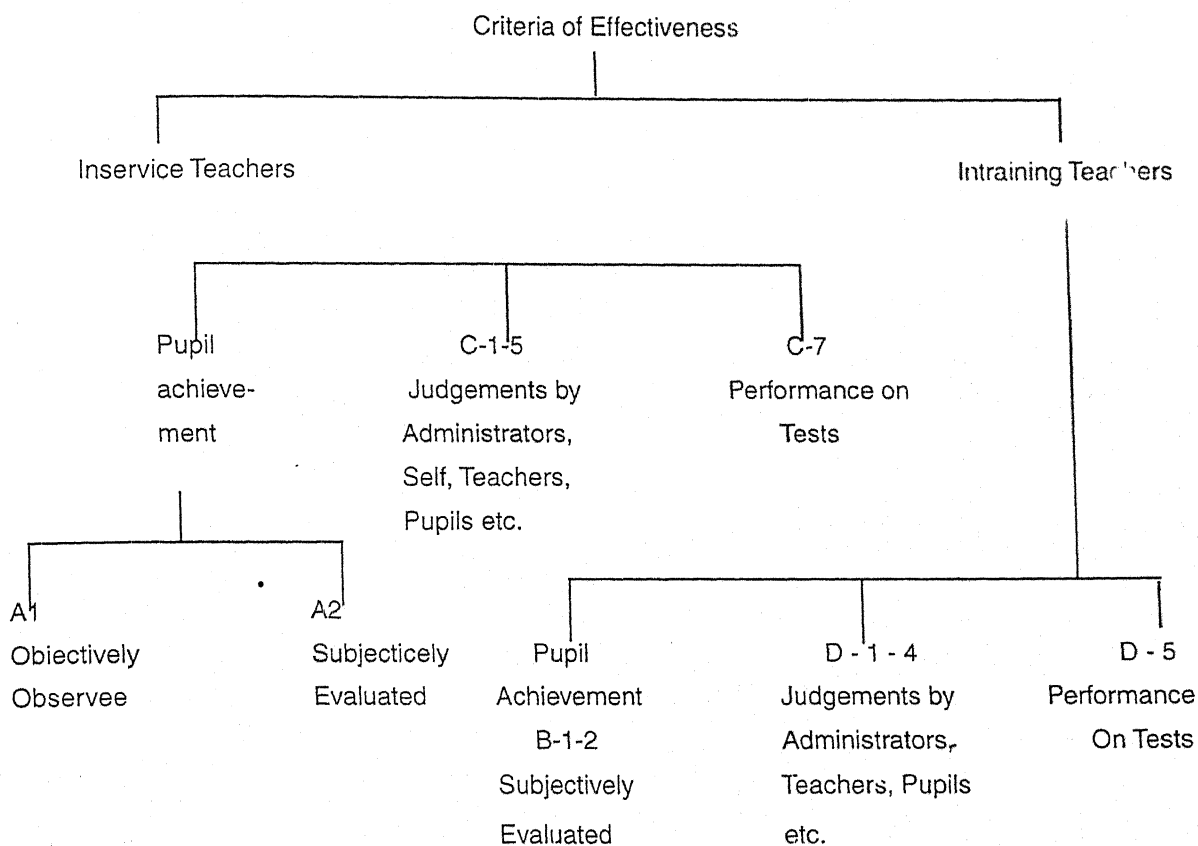
The five cells in the top row (on-line) define five types of variables, each of which has been used at one time or another as a criterion for evaluating teachers. The four cells in the second row (off-line) define four additional types of variables that affect the outcomes of teaching and that are not controlled by the teacher. The arrows in the diagram indicated the flow of influence from one variable to the next. Each cell is joined by such an arrow to the one other cell that it influences most directly. Note that all of the other cells shown affect pupil learning outcomes directly or indirectly. The effectiveness of a teacher depends, then, on at least eight different kinds of variables and it is vital that they be distinguished clearly from one another. It is then the aim of research in teacher effectiveness to clarify the contributions of all eight to teacher effectiveness.

This model derives directly from Mitzel's. His progress criteria included preexisting teacher characteristics, teacher training variables, and teacher competencies. His process criteria included teacher performance and pupil learning experiences; and his environmental variables included variable in the remaining three of the four off-line cells (shown in the second line of Figure I).

Variables in the first four on-line cells have already been defined: the fifth, pupil learning outcomes, needs no definition here. The four off-line cells may need some explanation.

Teacher training variable in Figure I selects efforts of teacher educators or others to help a teacher grow in competence, that is, to add additional competencies to his or her repertoire. Of particular interest in preservice preparation, the training that goes on before the teacher

APPENDIX IIIB



ULTIMATE CRITERIAN

Teachers effect on:

1. Pupils Achievement and success in life
2. Pupils achievement in subsequent schooling
3. Pupils achievement of current educational objectives
4. Pupils satisfaction with teacher
5. Sijoromtemdemt's satisfaction with Teacher
6. Teacher's values or evaluative attitudes
7. Teacher's Knowledge of Educational, Psychological and mental Hygiene
8. Teacher's emotional and social adjustment
9. Teacher's Knowledge of methods of curriculum construction
10. Teacher's Knowledge of subject matter
11. Teacher's interest in the subject matter
12. Teacher's grades in practice teaching courses
13. Teacher's grades in education courses
14. Teachers intelligence.

The Hierarchy of criteria according to ultimacy. American Education Research Association, 1952. pp. 243-244.

APPENDIX V

V.T.T.P. NORMS

Reliability Coefficients of VTTP

Evaluators	No. of Teachers Tested	Coefficient of Reliability
1. Principals	56	.81
2. Colleagues	83	.79
3. Students	121	.76
4. Teachers themselves	90	.84

Validity Coefficients of V. T. T. P.

Method	Coefficient of Validity
1. Known cases of High and low teachers N = 160	.74
2. Evaluation and re evaluation done by	
(i) Colleagues N = 300	.71
(ii) Students N = 150	.80
(iii) With 'Teacher' Effectiveness scale (after correlation scores for attenuation)	.80
(iv) Dr. N.S. Chauhan and Rashmi Jain's Efficiency scale	.69
(v) Follow-up of 105 teachers (Entrance and after 3 Years)	.61
(vi) With Teaching aptitude test J.D. Kapoor	.72
The Set V. T. T. P.	

Range of scores 0 - 325

The scaling of score (cumulative)

High - 325

Fairly High - 246.55

Medium - 164.50

Poor - 82.24

Very Poor - 0

No. of	Items	Range
TPC	11	0 - 128.50/129
TVC	7	0 - 124.50/125
TSC	7	0 - 76

<u>Area</u>	<u>Name</u>	<u>Symbol</u>	<u>Raw Score</u>
1. T. V. C. Dutiful (Accountability)		AT	25.0
2. TSC Impartial (Impartiality)		IM	24.0
3. T. V. C. Good Expression (Effective communication)		EC	22.0
4. T. P. C. Self confidence		SC	23.0
5. TVC (Regularity punctuality)		RE	21.0
6. T. S. C. Discipline Loving (Low of discipline)		DL	20.0
7. TPC Mentally healthy (phys./Men. Health)		HE	19.0
8. TPC Presence of Mind		PM	18.0
9. TVC Resourceful (Creative Resourcefulness)		CR	17.0
10. TVC Scholarship		SP	16.0
11. TSC Helping Attitude (Understangness)		UN	15.0
12. TPC Industrious		IN	14.0
13. TPC Composure (Composed)		CO	13.0
14. TVC Patience (Motivating Ability)		MA	12.0
15. TVC Good Admintrator (Administrative Ability)		AA	11.0
16. TPC Pleasing/Impressing Appearance (Imp. Personality)		PA	10.0
17. TPS wide Interests		WI	9.0
18. TSC Accommodativity		AC	8.0
19. TPC Simplicity (Modesty)		MO	7.0
20. TPC Sense of Humour		SH	6.0
21. TSC Sociability		SO	5.0
22. TPC Dynamicit y/Vi tality		VI	4
23. TPC Dynamicity/Vitality		VI	4
24. TSC Sporting Spirit		SS	3
25. TSC - Political Proneness		PP	1

TPC

1. SC
2. FE
3. PM
4. IN
5. CO
6. PA
7. WI
8. MO
9. SH
10. VI
11. DE

PVC

- AT
- EC
- RE
- CR
- SP
- MA
- AA

TSC

- IM
- DL
- UN
- AC
- SO
- SS
- PP

APPENDIX VI

TAT NORMS

Raw Scores	Grades	Raw Scores	Grades
Range		Range	
41 - 81	G	264 - 300	C
82 - 121	F	301 - 347	B
122 - 166	DE	384 and above	A
16 - 263	D		

G - Defective

F - Border line

E - Dull Normal

D - Normal or Average

C - Bright Normal

B - Superior

A - Very Superior.

APPENDIX V

V.T.T.P. NORMS

Reliability Coefficients of VTTP

Evaluators	No. of Teachers Tested	Coefficient of Reliability
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(iv) Dr. N. S. Chauhan and Rashmi Jain's Efficiency scale	.69
(v) Follow-up of 105 teachers (Entrance and after 3 Years)	.61
(vi) With Teaching aptitude test S. D. Kapoor	.72

LIST OF BOYS INSTITUTION AND SAMPLE OF TEACHERS OF EACH EXPERIENCE GROUP

NO. Name of Institution	Arts Teachers Experience				Science Teachers Experience				Grand Total
	Upto 10 Yrs	11-20 about	21 and above	Total	Upto 10 Yrs	11-20	21 and above	Total	
1. Shree Varni Jain Inter College Lalitpur	2	3	2	7	2	3	2	7	14
2. Shanti Niketan Inter College Maharauni	3	3	0	6	3	3	0	6	12
3. Mardam Singh Inter College Talbehah	3	2	3	8	3	2	3	8	16
4. G.I.C. Lalitput	3	2	3	8	3	2	3	8	16
5. Saraswati Inter College Madavara	3	2	3	8	3	2	3	8	16
6. G.I.C. Jhansi	2	3	1	6	2	3	1	6	12
7. G.N.K. Inter College Jhansi	2	2	1	5	2	2	1	5	10
8. B.B. Inter College Jhansi	2	3	3	8	2	3	3	8	16
9. L.B.M. Inter College Jhansi	2	1	2	5	2	1	2	5	10
10. S.P. Inter College Jhansi	2	2	2	6	2	2	2	6	12
11. G.I.C. Samthar	2	2	3	7	2	2	3	7	14
12. Adarsh Inter College Month	4	3	3	10	4	3	3	10	20
13. Christion Inter College Jhansi	2	4	5	11	2	4	5	11	22
14. D.A.V. Inter College Orai	2	2	6	10	2	2	6	10	20
15. A.N.D. Inter College Orai	2	2	2	6	2	2	2	6	12
16. Chatrasal Inter College Jaloun	2	0	2	4	2	0	2	4	8
17. S.D. Inter College Orai	2	2	2	6	2	2	2	6	12
18. B.K. Inter College Madhogar	2	2	2	6	2	2	2	6	12
19. G.I.C. Orai	2	3	1	6	2	3	1	6	12
20. G.I.C. Bangara	2	2	2	6	2	2	2	6	12
	46	45	48	139	46	45	48	139	278
Total No of Boys Institutions	155								
Total No of Girls Institutions	32								

LIST OF INSTITUTIONS (GIRLS) AND THE SAMPLE CHOSEN FROM EACH INSTITUTIONS

Arts Teachers of each
Experience group

Science Teachers of each
Experience group

NO. Name of Institution	Upto 10 Yrs	11-20 about	21 and above	Total	Upto 10 Yrs	11-20 Yrs	21 and above	Total	Grand Total
1. Arya Kanya Inter College Orai	2	•	2	6	2	2	2	6	12
2. G.G.I.C. Orai	2	2	2	6	2	2	2	6	12
3. Arya kanya Inter College Kalpi	2	1	2	5	2	1	2	5	10
4. Nagar Palika Inter College Kalpi	2	2	0	4	2	2	0	4	8
5. Kasturba Inter College Jaloun	2	2	2	6	2	2	2	6	12
6. K.N. Girls Inter College Konch	2	2	1	5	2	2	1	5	10
7. A.U. Balika H.S.S. Orai	2	2	1	5	2	2	1	5	10
8. Tej Singh A.B.H.S.S. Orai	2	2	0	4	2	2	0	4	8
9. G.G.H.S. Babai	1	1	0	2	1	1	0	2	4
10. G.G.I.C. Lalitpur	2	3	4	9	2	3	4	9	18
11. G.G.I.C. Mahrauni	2	2	3	7	2	2	3	7	14
12. G.G.I.C. Talbehath	2	2	3	7	2	2	3	7	14
13. S.P.G.G.I.C. Jhansi	2	2	2	6	2	2	2	6	12
14. G.G.I.C. Samthar	2	2	3	7	2	2	3	7	14
15. G.G.I.C. Ranipur	2	2	2	6	2	2	2	6	12
16. G.G.H.S.S. Babina	3	2	3	8	3	2	3	8	16
17. G.G.H.S.S. Barua Sagar	2	2	3	7	2	2	3	7	14
18. G.G.H.S.S. Gursarain	2	2	1	5	2	2	1	5	10
19. Arya Kanya Inter College Jhansi	1	1	0	2	1	1	0	2	4
20. K.C. Sharma G.I.C. Jhansi	2	2	1	5	2	2	1	5	10
21. K.I.C. Jhansi	1	1	3	5	1	1	3	5	10
22. S.D. Girls Inter College Jhansi	1	1	2	4	1	1	2	4	8
23. H.M.M. Girls inter College Jhansi	2	3	3	8	2	3	3	8	16
24. L.T. Kanya Inter College Jhansi	2	2	3	7	2	2	3	7	14
25. Nagar Palika Kanya I.C. Mau Ranipur	2	2	1	5	2	2	1	5	10
	47	47	47	141	47	47	47	141	282